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REGION VIII

LAND USE REPORT

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LAND USE REPORT

Prepared by the Region VIII YAB
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December 1, 1972

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The Colorado Open Space Council has been especially cooperative to the Land Use Task Force members. COSC loaned us materials that were instrumental in the writing of the Colorado report in Part III. Rick Hoadley of the Rocky Mountain Center on the Environment was also most helpful in the completion of the Colorado report.

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Special thanks must go to Jim Monaghan, who is a former Region VIII YAB member and who was the first Region VIII YAB National Land Use Task Force Representative. Jim gave the Land Use Report its initial impetus, and he was the principal author of the Land-Use Questionnaire that was distributed within the Region VIII EPA Headquarters in Denver. His contribution will be essential to any recognition this report receives.

Federal personnel in the Federal agencies discussed in this report, and personnel in other agencies not included in Part II, were most cooperative. Of course, of special significance was the complete cooperation and assistance of EPA personnel in the Region VIII Denver Headquarters, who tolerated what at first may have been regarded as our intrusion into their offices; and who, with good nature and keen interest, also are examining and tolerating our criticisms of the land-use impacts of their programs. In this regard, we would like to express our greatest appreciation to John A. Green, the Regional Administrator, for his unqualified support and assistance. Without his support and interest, this report never could have begun, nor could it have been completed.

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SUMMARY OF RECOMMENDATIONS

Chapter II. Administrative Recommendations

1. A Land-Use Office should be located within the Office of the Assistant Regional Administrator for Planning and Evaluation. (See pp. 5-8.)

Chapter III. Air Pollution Control Programs

1. The EPA should thoroughly evaluate the land-use ramifications of its promulgation of standards and procedures and then develop a set of land-use priorities which could work in conjunction with air quality requirements. This could be justified on the grounds that the EPA has the authority and responsibility to protect the total environment. (p. 30)

2. The EPA should consider all complex air pollution sources (parking lots, shopping centers, stadiums, etc.) in any air quality control plan, especially with regard to the new source site selection permit procedure. (p. 30)

3. The EPA should require those Air Quality Control Regions which will not meet the standards by 1975 to incorporate land-use controls into their control strategies. (p. 31)

4. The Region VIII EPA should evaluate the land-use impact from the enforcement of new source performance standards in the Region, especially with regard to new power plants. (p. 32)

5. Since the air implementation plans impact land-use in several important ways, and since the air program grants serve to enact the implementation plans, the EPA should require applicants with jurisdiction over Priority I areas to be more specific in describing what they propose to do; and, where necessary, the EPA should require the applicants to delineate proposed land-use and transportation controls and planning (especially Denver and Salt Lake City). (p. 34)

Chapter IV. Water Pollution Control Programs

1. The EPA should reevaluate its priorities of resource allocation to comply with the agency's mandates and agreements. (p. 41)

2. The EPA should provide the planning branch with the manpower necessary to review HUD Comprehensive Planning Grants (701 Grants). (p. 41)

3. The EPA should reevaluate its Region VIII agreement with HUD and develop a more detailed process for implementing the requirements of the agreement. (p. 41)

4. The EPA should explicitly define the conditions for waivers to the agreement requirements and then rigorously enforce these conditions. (p. 41)

5. The EPA should evaluate the states' work plans according to the EPA's Water Quality Management Planning general guidelines and require the states, where definite planning is being done, to prepare an environmental assess-

ment on the proposed implementation of such planning. (p. 42)

6. The EPA should determine if a state's construction grant priority criteria is consistent with state, local, and regional land-use plans and objectives. (p. 43).

7. The EPA should provide the regional planning branch with more personnel to assist the states with their planning requirements. (p. 49)

8. The EPA should develop a set of land-use priorities and guidelines with which to judge the total environmental acceptability of proposed wastewater treatment projects. (p. 49)

9. The EPA should write more environmental impact statements on proposed treatment grants. (p. 49)

10. The EPA should require applicants (for Section 8 grants) to furnish more complete and detailed descriptions of the environmental impact of their proposed projects. This could be accomplished if the EPA would simply enforce their own interim guidelines for Preparation and Review of Environmental Assessments for Municipal Wastewater Treatment Projects. (pp. 49-50)

11. The EPA should require regional and metropolitan plans to be completed to such a degree, including alternatives, that the desirability and feasibility of construction grants to areas within such planning districts may be properly evaluated by the EPA. (p. 50)

12. The EPA should provide more money to APOs for basin plans that also satisfy HUD comprehensive planning requirements. (p. 53)

13. The EPA should increase the Region's planning staff to assist the APOs in developing basin plans. (p. 53)

14. The EPA should constantly review the environmental impact, as outlined in its guidelines, of any planning that has been finished as a part of the **completed** basin plan. (p. 54)

15. The EPA should require the basin planning organizations to supply sufficient information in their work programs to allow the EPA to discern the general direction that the basin planning will take (p. 54); and then

16. The EPA should make a preliminary evaluation of the land-use effects of a basin planning grant for that basin.

Chapter V. Environmental Impact Statement Review

1. The EPA should address more aggressively improper land management from federal projects described in Environmental Impact Statements. (p. 60)

2. The EPA should work at influencing more federal land management agencies at the decision-making level in order to introduce greater environmental and land-use concern into the total federal land management process. (p. 60)

3. When the EPA evaluates its own proposed projects, it should weigh equally the long-range impact of the project with its short-term benefits in terms of pollution abatement. (p. 61)

4. The EPA should consider all the land-use related pollution problems that could result from its proposed

projects. (p. 61).

5. The EPA should write more environmental impact statements on its own projects. (p. 62)

Chapter VI. Office of Federal Activities

1. The Office of Federal Activities should work with the Assistant for Planning and Evaluation to establish a specific list of major land-use problems on federal land within the Region, concentrating on those land-use problems that adversely affect, or are likely to adversely affect, environmental quality. (p. 65)

2. The Office of Federal Activities should expand its sphere of influence over those Federal agencies which have jurisdiction over the land-use problems established under Recommendation (1). (pp. 65-66)

3. The Office of Federal Activities should assist those Federal agencies in alleviating the improper land-uses and concurrently enhance the environmental quality of federal land. (p. 66)

Chapter VIII. Solid Waste Programs

1. The EPA should deemphasize the sanitary landfill as the main method of solid waste disposal and begin to encourage states and local governments to develop comprehensive solid waste management plans which incorporate several solid waste disposal methods, including (in order of priority) a) recycling, b) composting, c) incineration,

and d) sanitary landfills. (pp. 71-72)

2. The EPA should develop solid waste management planning guidelines to assist states and local government in developing the type of solid waste management plan described in Recommendation (1), above. (p. 72)

3. As provided in the Solid Waste Disposal Act, the EPA should begin to address, in the form of technical assistance to the states, local governments, and individuals, the solid waste problems associated with agricultural wastes, mine tailings, and sedimentation in general. (p. 72)

4. The Solid Waste Branch of the EPA should expand its technical assistance to other federal agencies with special regard to mine tailings (oil shale development) and slash on Forest Service leases. (p. 72)

Chapter IX. Pesticides Programs

1. The EPA should provide the regional Pesticide Programs Branch with the resources that will be necessary to thoroughly enforce the new Federal Environmental Pesticide Control Act of 1972; special emphasis should be placed on providing the staff required to monitor the use of pesticides by individuals. (p. 76)

Chapter X. Noise Programs

1. The EPA Regional Noise Program should encourage state and local governments to adopt noise legislation which could abate noise pollution without relying upon

or fomenting consumptive land patterns (i.e., tree belts along highways vs. land buffer zones). (p. 78)

Other Federal Agencies; Chapter III. The Park Service

1. The Region VIII EPA should explore the extent and the implications of flouride pollution, and formulate guidelines for national promulgation under Section 112 of the Clean Air Act.
2. The Region VIII EPA should influence other Regions to submit statements on the extent of the flouride problem in their regions and make recommendations for consideration by the national EPA Headquarters.

PART I. REGION VIII EPA

CHAPTER I. GENERAL

1. History

a. Pursuant to the National Youth Advisory Board's adoption of the land-use study as a national YAB project, the Region VIII YAB established a land-use task force to implement the proposed study.¹ An initial effort to define precisely regional EPA policies and programs took the form of a land-use questionnaire formulated by the Region VIII land-use task force (see Appendix). The questionnaire contained specific sections dealing with Air, Water, Solid Waste, Pesticides, and Noise Pollution Control Programs. The latter sections were directed to the appropriate members of the regional EPA staff. These personnel also received a section containing general observations and questions, as did the Regional Administrator, the Deputy Regional Administrator, the Regional Assistant for Planning and Evaluation, the Chief of Interagency Assistance and Evaluation, and the Director of the Enforcement Branch. Responses to the Questionnaire collectively formed the necessary basis for subsequent in-depth research.

b. Following the evaluation of the Questionnaire and the concurrent definition of research priorities by the land-use

¹In February, a National Youth Advisory Board meeting was held in Denver at which the regional representatives developed a land-use study outline. This outline described the general areas that the land-use study was to address (see Appendix).

task force, follow-up interviews were conducted with selected EPA personnel. Special attention was directed towards attaining further insight from individuals in those EPA divisions or programs that appeared, from Questionnaire responses, to have a definite effect upon land-use through their various pollution control and abatement activities. It is on information thus obtained that the draft final report on the Region VIII EPA's land-use impact was based.

c. This Draft Land-Use Report was circulated for comment throughout the Region VIII office. These comments, along with follow-up interviews with the regional staff, were reviewed and analyzed and then incorporated into this Final Report. It is the hope of the Region VIII Land-Use Task Force that this report's recommendations can and will be implemented by the EPA's Region VIII Headquarters. The primary purpose of the report is to convince the decision-makers in the EPA's Denver Headquarters of the need to integrate land-use considerations into the decision-making process. The Final Report was also written for state governments, the general public and environmentalists in order to inform them of Region VIII EPA programs, priorities and activities that relate to and impact land-use.

2. Scope of the Report

a. The Final Report addresses those EPA programs, as they are conducted in Region VIII, which have a significant direct or

indirect land-use impact. These include the Region's Air Programs (Chapter 3), Water Programs (Chapter 4), Solid Waste Programs (Chapter 8), Pesticides Programs (Chapter 9), and Noise Programs (Chapter 10), along with a discussion of the Office of Federal Activities (Chapter 6), the Environmental Impact Statement Review Division (Chapter 5), and the Planning and Evaluation Section (Chapter 7).

b. The recommendations, which follow each section of the Report, pertain to the Region VIII EPA's policy as that policy relates to and affects land-use.² Chapter Two of the Report is unique in that it concerns how the EPA in Region VIII should address the administrative elements and procedures for introducing and developing a land-use element for all of the Region's program elements.³

3. Conclusions

a. Theoretically, the EPA is responsible for protecting and enhancing the nation's environmental quality; but, in reality, the Agency is simply not equipped with the tools necessary to accomplish such a massive task. In fact, the net effect of the EPA's mandates and programs actually is to trade short-term pollution abatement for long-range environmental degradation.⁴

²In many cases, the EPA has no defined or written policy. However, the normal activity of each program follows a certain pattern which may be interpreted as policy.

³These elements and procedures could serve to implement the recommendations of the Region VIII YAB Land-Use Task Force as they are presented in this report.

⁴EPA-funded interceptor sewers designed to improve water quality can actually inspire new development and, consequently, create new pollution problems.

b. Since all forms of pollution can in some way be linked to land-use, land-use controls would appear to be a vital element for any serious attempt to protect or enhance environmental quality. However, the long-range environmental impact of land-use is not completely understood and, therefore, it is difficult to determine what constitutes proper land-use. In other words, it is simpler to identify improper land-uses which result in environmental degradation than it is to define proper land-uses which will preserve environmental quality. Yet, by beginning to define and avoid improper land-uses, proper land-use will become easier to identify and implement.

CHAPTER II. ADMINISTRATIVE RECOMMENDATIONS

1. General

a. The Region VIII EPA Headquarter's front-line staff, which includes the Regional Administrator, the Deputy Regional Administrator, the Assistant Regional Administrators and the Division Chiefs provides the leadership and direction for the regional program personnel. Therefore, it is essential that a planning and coordinating element be established within the latter central administrative framework so that land-use considerations can be integrated into the Region's daily activities.

b. This administrative element should be a Land-Use Office which, besides introducing land-use considerations to the Region, could both implement the YAB Land-Use Task Force's recommendations as contained in this report and prepare the Regional Office for its possible role in implementing any national land-use legislation.⁵

c. The land-use element should be located within the Office of the Assistant Regional Administrator for Planning and Evaluation. The Planning and Evaluation Office is best suited to coordinate and develop land-use considerations and decisions for Region VIII because it works closely with the Regional Administrator and the Program Chiefs; but, more importantly, because it evaluates the Region's total resource capability and establishes accomplishment priorities for the Region.

⁵The proposed land-use legislation (S.632), as it passed the Senate, required EPA review of state land-use plans and required EPA programs to be consistent with the state land-use plans.

2. Land-Use Office: Primary Responsibilities

a. Policy

- (1) Develop a regional land-use policy from the EPA's national land-use policy.
- (2) Identify the Region's programs that impact land-use.
- (3) Promulgate guidelines for regional programs with regard to proper and adequate land-use considerations.

b. Evaluation and Planning

- (1) Evaluate the Region's program-by-program activity as it relates to land-use (a continuing process).
- (2) Assist the Assistant Administrator for Planning and Evaluation in developing Regional Accomplishment Plans from a land-use perspective.

c. Communication

- (1) Establish a regional Land-Use Council made up of representatives from all of the Region's programs to assist the Land-Use Office in making land-use policy and in implementing such policy.
- (2) Develop training or educational programs to inform the Regional Staff concerning land-use considerations.

3. Land-Use Office: Secondary Responsibilities

- a. Inform the states of land-use considerations in relation to environmental protection and quality.
- b. Write an annual Regional Report on the land-use impact of the Regional program activity.
- c. Conduct any research that might be necessary to better

understand and evaluate the relationship between land-use and environmental quality in the Region.

d. Provide assistance to the states to integrate land-use considerations into the state decision-making process.

4. Land-Use Office: Objectives

a. Educate the Regional personnel with regard to land-use problems, the relationship between land-use and environmental quality, and land-use priorities.

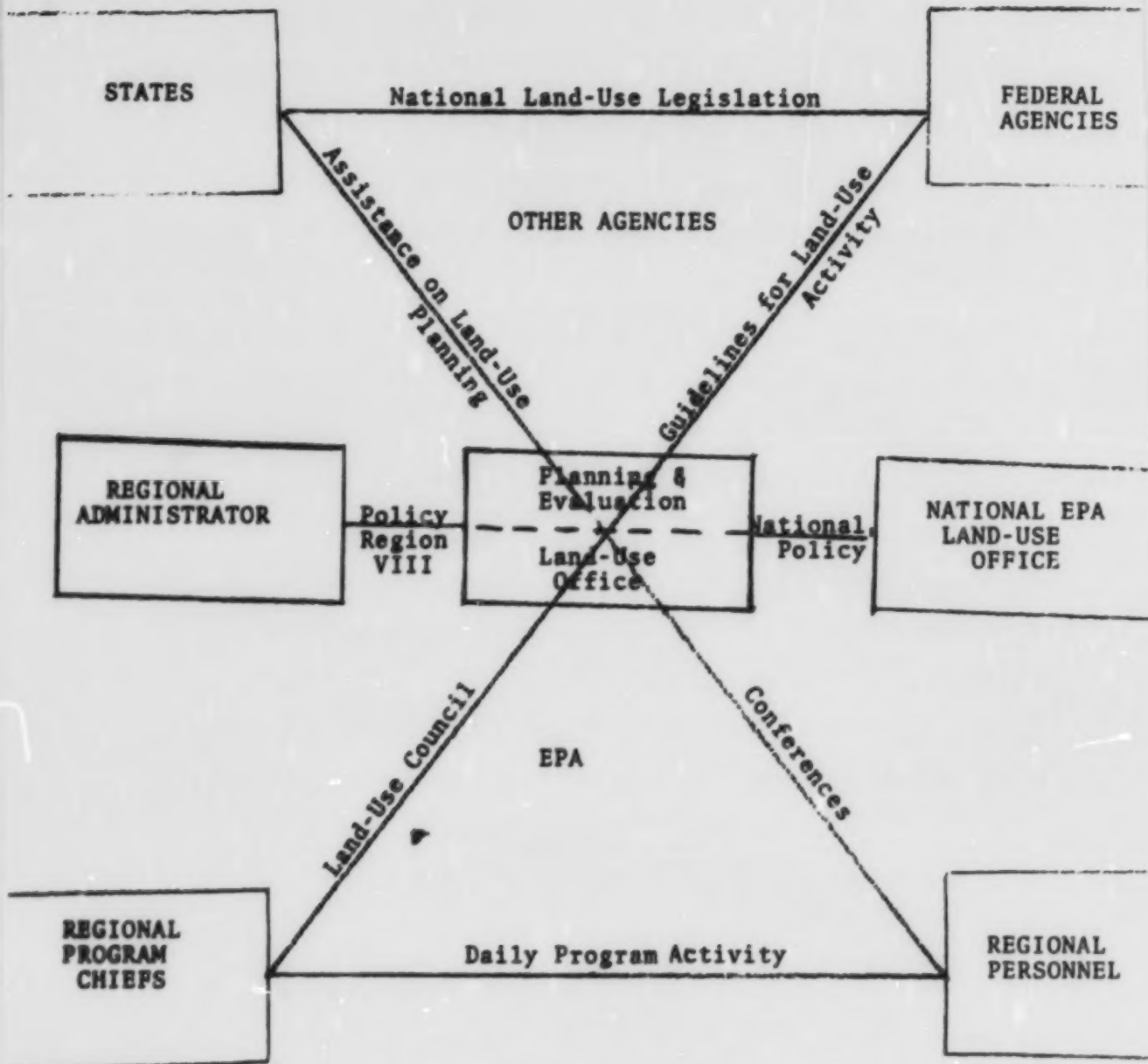
b. Introduce into the Region VIII EPA's planning process a primary emphasis on environmental protection through land-use considerations.

c. Define other Federal activity within the Region which has a significant land-use impact.

d. Develop a set of guidelines for the states and other Federal agencies for proper land-use planning in relation to environmental protection.

e. Write an annual report that identifies how the Region is affecting land-use and, subsequently, environmental quality.

5. Flow Chart



CHAPTER III. AIR POLLUTION CONTROL PROGRAMS

1. General

a. The EPA's Air Pollution Control Programs in Region VIII affect land-use in an indirect and somewhat enigmatic manner. This chapter analyzes some of the effects that EPA decisions have had and theoretically could have upon land-use. The major impact discernable is a dispersion of industry throughout rural areas and away from urban or industrialized localities.

b. For the most part, the Region VIII Air Pollution Control Programs are confined to implementing the controls and regulations necessary for meeting the national ambient air quality standards authorized by the Clean Air Act of 1970 and promulgated by the EPA Headquarters in Washington, D. C. The regional implementation of these standards is subject to strong guidance and control from the national office. The regional air program personnel are, therefore, in essence implementors of a national policy which allows for no major regional interpretation or adaptation.⁶ However, this seems to be more due to the nature of the Clean Air Act than the result of policy originating at Headquarters; and, because of the nature of the Act, this strong national

⁶This is in contrast to the decentralized nature of the EPA's other programs (i.e. Federal Activities, E.I.S. Review, Planning and Evaluation, etc.)

guidance does not presently represent a major deficiency in the EPA's Air Pollution Control Programs.⁷

c. The EPA's specific air pollution control tools include the implementation plans process through which the states are required to outline an enforceable procedure to clean up any of their polluted air quality control regions (A.Q.C.R.s)⁸; a set of national primary and secondary ambient air quality standard for sulfur dioxide, nitrogen oxides, carbon monoxide, hydrocarbons and particulate matter⁹; national emission standards for hazardous air pollutants, asbestos, beryllium and mercury; and a grant system for demonstration and state program grants.¹⁰ These plans, standards and grants comprise the EPA's air pollution abatement system and will be discussed in detail in the other sections of this chapter.

d. Region VIII's primary (Priority I) air pollution problems currently are within eight air quality control regions scattered among three states; Montana, Colorado, and Utah. In Montana the air pollution problem is basically one concerning particulate and sulfur dioxide industrial emissions. Colorado's difficulties stem from carbon monoxide and hydrocarbon emissions which are

⁷The highly regulative nature of the Clean Air Act leaves little room for regional or local interpretations. The national EPA interpretations of this Act, however, have allowed even less flexibility to the regional offices.

⁸42 USC #1857

⁹Ibid

¹⁰These grants fund most of the states' air pollution programs.

typical of an urban environment with its high concentration of auto emissions. In Utah, one air region is polluted beyond the national primary standards in all categories, and another region suffers from excesses of particulates, sulfur dioxides, and nitrogen oxides¹¹ (see exhibits 1, 2, and 3). Less severe pollution problems (Priority II) exist in six different air quality regions within four states; South Dakota, North Dakota, Wyoming, and Montana. In all of these regions, there is some minor difficulty with either particulates or sulfur dioxides.¹² However, there are ten A.C.Q.R.s throughout Region VIII which are classified as priority III, which means that their air pollution levels are below both primary and secondary national ambient quality standards.¹³

e. In the sections that follow, the evaluation of the EPA's air programs is divided into three separate discussions: 1) the Clean Air Act of 1970 (section 2); 2) the EPA's implementation plan preparation guidelines (section 3); and 3) air program and demonstration grants (section 4).

2. The Clean Air Act of 1970

a. The discussion of the Clean Air Act in this section defines the Act's relationship to future land-use trends. Often, these

¹¹State implementation plans for Region VIII

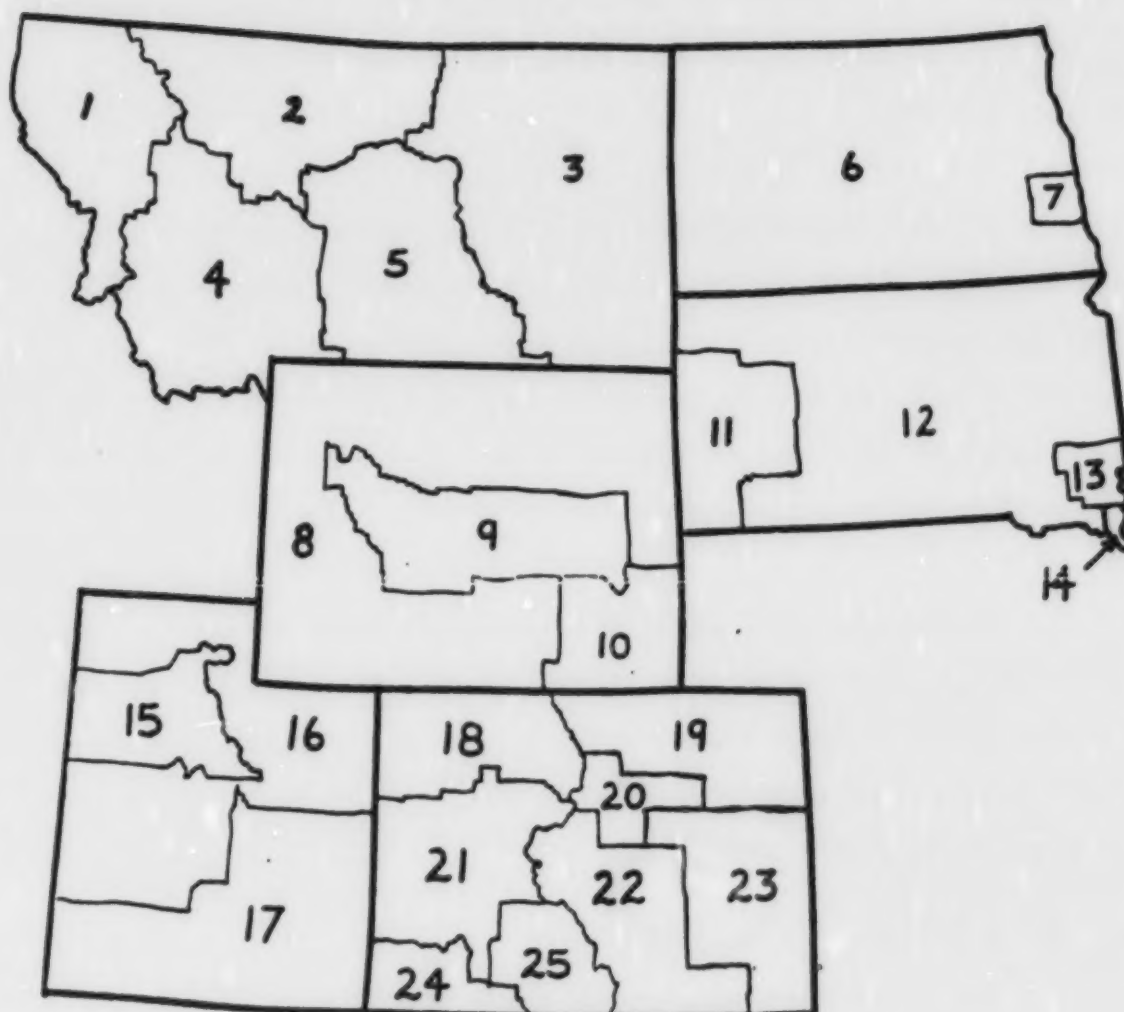
¹²Ibid.

¹³Ibid.

EXHIBIT 1

AIR QUALITY CONTROL REGIONS FOR REGION VIII

AIR QUALITY CONTROL REGIONS
(AQCR)



Air quality control regions have been established through the cooperation of Federal, state, and local governments. These regional programs work toward the abatement, prevention, and control of air pollution in their respective areas. A total of 247 such regions has been established nationwide. There are 25 AQCR's in the Rocky Mountain-Prairie Region.

EXHIBIT 2

NAMES OF AIR QUALITY CONTROL REGIONS (AQCR) FOR REGION VIII

Montana

- 1—Missoula Intrastate AQCR
- 2—Great Falls Intrastate AQCR
- 3—Miles City Intrastate AQCR
- 4—Helena Intrastate AQCR
- 5—Billings Intrastate AQCR

North Dakota

- 6—North Dakota Intrastate AQCR (remaining area)
- 7—Metropolitan Fargo-Moorhead Interstate AQCR (N. Dak. — Minn.)

Wyoming

- 8—Wyoming Intrastate AQCR (remaining area)
- 9—Casper Intrastate AQCR
- 10—Metropolitan Cheyenne Intrastate AQCR

South Dakota

- 11—Black Hills—Rapid City Intrastate AQCR
- 12—South Dakota Intrastate AQCR (remaining area)
- 13—Metropolitan Sioux Falls Interstate AQCR (Iowa—S. Dak.)
- 14—Metropolitan Sioux City Interstate AQCR (Iowa—Neb.—S. Dak.)

Utah

- 15—Wasatch Front Intrastate AQCR
- 16—Utah Intrastate AQCR (remaining area)
- 17—Four Corners Interstate AQCR (Ariz.—Colo.—N.M.—Utah)

Colorado

- 18—Yampa Intrastate AQCR
- 19—Pawnee Intrastate AQCR
- 20—Metropolitan Denver Intrastate AQCR
- 21—Grand Mesa Intrastate AQCR
- 22—San Isabel Intrastate AQCR
- 23—Comanche Intrastate AQCR
- 24—Four Corners Interstate AQCR (Ariz.—Colo.—N.M.—Utah)
- 25—San Luis Intrastate AQCR

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PRIORITY RATINGS OF REGION VIII AIR QUALITY CONTROL REGIONS

Exhibit 3

AQCR	PARTIC- ULATES	SO ₂	NO _x	CO	HC-O _x
1. Missoula Intrastate	I	III	III	III	III
2. Great Falls Intrastate	III	I-A	III	III	III
3. Miles City Intrastate	III	III	III	III	III
4. Helena Intrastate	I-A	I-A	III	III	III
5. Billings Intrastate	II	II	III	III	III
6. North Dakota Intrastate	II	III	III	III	III
7. Metro Fargo-Moorhead Interstate	II	III	III	III	III
8. Wyoming Intrastate	III	III	III	III	III
9. Casper Intrastate	II	III	III	III	III
10. Metro Cheyene Intrastate	II	III	III	III	III
11. Black Hills (R.C.) Intrastate	III	III	III	III	III
12. South Dakota Intrastate	III	III	III	III	III
13. Metro Sioux Falls Interstate	II	III	III	III	III
14. Metro Sioux City Interstate	III	III	III	III	III
15. Wasatch Front Intrastate	I	I	I	I	I
16. Utah Intrastate	III	III	III	III	III
17. Four Corners Interstate	I-A	I-A	I-A	III	III
18. Yampa Intrastate	III	III	III	III	III
19. Pawnee Intrastate	I	III	III	III	III
20. Metro Denver Intrastate	I	III	III	I	I
21. Grand Mesa Intrastate	III	III	III	III	III
22. San Isabel Intrastate	I	III	III	III	III
23. Comanche Intrastate	III	III	III	III	III
24. Four Corners Interstate	I-A	I-A	I-A	III	III
25. San Luis Intrastate	III	III	III	III	III

of AQCRs for REGION VIII by POLLUTANTS and RATINGS

PRIORITIES	PARTIC- ULATES	SO ₂	NO _x	CO	HC-O _x	TOTALS
I	8	5	3	2	2	20
II	6	1	0	0	0	7
III	11	19	22	23	23	98

trends can be traced directly to the Act. This point might best be illustrated through an example concerning the non-degradation clause, which has been interpreted by the courts to be a necessary element of the implementation plans authorized under the Clean Air Act of 1970.¹⁴ The non-degradation clause would not have an immediate impact upon the unindustrialized land and clean air of northeastern Wyoming, but when the billions of tons of coal begin to be mined from that area and the power utilities scramble to fire new power plants near the coal resources, the non-degradation clause certainly would control and, to some extent, limit that development. Thus, section 2 concerns those provisions of the Clean Air Act that will significantly affect land development, such as section 109 on the National Ambient Air Quality Standards and section 111 on Standards of Performance for New Stationary sources; and, to some extent, section 110 on Implementation Plans. However, the discussion of implementation plans is limited here to the national mandate for such plans as embodied in the Act and does not concern the EPA's interpretation of this mandate or the states' development and enforcement of plans. The latter are evaluated in section 3.

b. The Clean Air Act of 1970 is the foundation of the EPA's Air Pollution Control Program. The Agency's land-use impact

¹⁴Sierra Club vs Ruckelshaus, U.S. 103-72(1972).

from this program is two-fold: it is the result of the EPA's enforcement of the Clean Air Act's standards and provisions; and it is the result of the EPA's interpretation of these standards and provisions. This section analyzes this former impact.

c. One of the major sections (section 109) of the Clean Air Act establishes an ambient air quality standard system through which the EPA promulgates and enforces national primary and secondary standards. These ambient standards are the most obvious source of land-use impact within the EPA's Air Programs. Directly related to these ambient air quality standards is the current controversy concerning the EPA's failure to promulgate a non-degradation policy for clean air sheds. The controversy is a result of the inconsistency within the Clean Air Act between ambient standards and the Act's defined intention "to protect and enhance the quality of the nation's air resources so as to promote the public health and welfare . . ."15 An attempt by the EPA to enforce a non-degradation policy would substantially impact the relatively clean air sheds and undeveloped land of Region VIII.

1) The ambient air quality standards authorized under the Clean Air Act for the enhancement of air quality can often foment the degradation of undeveloped or moderately developed land. This tradeoff of land degradation for air pollution control

1542 USC #1857

illustrates Congress' and, to some extent, the EPA's¹⁶ obsession with short-term pollution abatement, their inability to recognize the land-use impact of ambient air standards, and their hesitation to adopt comprehensive pollution prevention techniques. Ambient air standards will lower the air pollution levels within highly industrialized regions, but at the expense of less polluted areas. Air pollution reductions are possible in highly polluted regions only by limiting the emissions of polluters already there and then precluding any new pollution sources from locating in the area. Thus, new pollution sources are forced to locate in relatively unindustrialized, unpolluted regions. In this manner, air pollution remains below the level that could cause public health hazards; but land pollution, which as yet has not been completely evaluated, is allowed and encouraged to proliferate unchecked and unmonitored. This dispersion of polluters has a dual environmental impact--the air quality is diminished and the land is degraded. Therefore, ambient air quality standards encourage the dilution of air pollutants in clean or moderately polluted air sheds. Thus, large pollution sources will be locating in increasing numbers within undeveloped areas such as Region VIII. Ambient air standards can effectively limit the concentration of polluters

¹⁶To the extent that the EPA may recommend to Congress revisions and/or amendments to environmental legislation.

and, concurrently, the concentration of industry or urbanization; but such standards cannot limit the dispersion of industry or slow urban sprawl, and, in fact, tend to encourage both.

The cost of locating outside established industrial zones would seem to prohibit industry from moving into undeveloped areas. The expense of installing air pollution control devices, however, may encourage industry to locate in undeveloped air quality regions. As pollution concentrates in developed areas, the cost of controlling it increases to a point where industry realizes that it is economically expedient to locate in undeveloped regions.

2) The resolution of the non-degradation controversy between the EPA and environmentalists will have a significant impact on land-use in Region VIII. The Sierra Club is challenging the legality of the current ambient air standards system on the basis that these ambient standards are inconsistent with the intent of the Clean Air Act. In *Sierra Club vs Ruckelshaus*, U.S. District Court District of Columbia, the Court concluded in favor of the Sierra Club.

Having considered the stated purpose of the Clean Air Act of 1970, the legislative history of the Act and its predecessor, and the past and present administrative interpretation of the Acts, it is our judgment that the Clean Air Act of 1970 is based in important part on a policy of non-degradation of clean air and that 40 C.R.F. #51.12(b), in permitting the states to submit plans which allow pollution levels of clean air to rise to the secondary standard level of pollution, is contrary to the

legislative policy of the Act and is, therefore, invalid. Accordingly, we hold that the plaintiffs have made out a claim for relief.¹⁷

This decision, however, is being appealed by the Administration, so its impact is yet to be seen. A literal interpretation of non-degradation would truncate future growth in Region VIII and other regions with relatively clean air. Complete non-degradation would mean no new air pollution sources could locate in clean air areas, and this would be tantamount to a zero-growth policy. Thus, if the Court's present non-degradation judgment prevails, a less literal definition of non-degradation is inevitable. Essentially, a limited non-degradation clause would establish an additional ambient air quality standard for high quality air regions. This type of non-degradation standard would contribute to the degradation of undeveloped land as much if not more than the current ambient air standards. In an attempt to rectify the confusion surrounding the definition of non-degradation, the Sierra Club has produced their own interpretation of degradation:

The formula . . . calls for a limit of 20% increase of recognized pollutants (particulates, sulfur dioxides, etc.) within one kilometer of the source, the amount actually emitted being averaged over the entire volume of air contained within the hemisphere defined by the one kilometer limit.¹⁸

¹⁷Sierra Club, et al vs. William D. Ruckelshaus, U.S. No. 1031-72, June 2, 1972.

¹⁸This Issue, August, 1972.

This definition, if adopted for a non-degradation clause or policy, would protect the air quality within undeveloped areas better than do the current ambient air standards being enforced by the EPA. However, such a definition would also ensure, and serve as a catalyst for, the development of almost all the vacant land that is suited for industrialization or urbanization. For example, the Sierra Club's non-degradation standard would essentially limit coal-fired power plants to a size capable of about a 40 megawatt output.¹⁹ This is in sharp contrast to some of the proposed 6,000 and possible 10,000 megawatt power plants.²⁰ Obviously, the Sierra Club's standard would guarantee less degradation of air quality in those clean air regions destined to inherit large power plants, but the land-use ramifications of this protection would be prodigious indeed. To meet the non-degradation standard within clean air regions and still provide the 6,000 megawatt capacity of a large power plant, power companies would be forced to scatter and disperse no less than 150 small power plants (40 megawatt) over the undoubtedly undeveloped land of any such clean air region.²¹

¹⁹Ibid.

²⁰A 6,000 megawatt plant is proposed for southern Utah (Kapairowits), and the North Central Power Study reports that there is enough coal in northern Wyoming to support up to six 10,000 megawatt power plants.

²¹Regions with a Priority III air pollution rating (clean air sheds) are usually relatively undeveloped areas. This is true for most of the land in Region VIII.

Thus, it is obvious that the non-degradation standard that has been proposed by the Sierra Club or any similar limited non-degradation standard, if adopted, would result in several definite land-use alterations. Assuming such land-use alterations, with their concurrent aesthetic, water, solid waste, noise, and other pollution are considered undesirable land degradation, then the enhancement of air quality that might be possible from the enforcement of a limited non-degradation policy could never compensate for the resulting land degradation.

3. The EPA's Air Implementation Plan Preparation Guidelines

a. In this section, the EPA's implementation plan preparation guidelines are analyzed with regard to their immediate land-use impact. The following paragraphs both illustrate how the EPA has interpreted section 110 of the Clean Air Act and evaluate the land-use ramifications of these interpretations. The role of the EPA's regional offices in assisting the states to develop their implementation plans, especially the transportation controls portion of these plans, is also evaluated.

b. Section 110 of the 1970 Clean Air Act states in part that

Each State shall, after reasonable notice and public hearings, adopt and submit to the Administrator, within nine months after the promulgation of a national primary ambient air quality standard (or any revision thereof) under section 109 for any air pollutant, a plan which provides for implementation, maintenance, and enforcement of such primary standard in each air quality control region (or portion thereof) within such State. In addition, such State

shall adopt and submit to the Administrator (either as part of a plan submitted under the preceding sentence or separately) within nine months after the promulgation of a national ambient air quality secondary standard (or revision thereof), a plan which provides for implementation, maintenance, and enforcement of such secondary standard in each air quality control region (or portion thereof) within such State.

Since the Administrator of the EPA was given the responsibility for approving these State implementation plans, the EPA interpreted section 110 of the Clean Air Act and promulgated in the August 14, 1971 Federal Register rules and regulations to the States for preparation and submission of air quality implementation plans. These rules and regulations and their land-use impact are the subject of this section.

c. Two of the most important Clean Air Act provisions that the EPA has translated and interpreted into implementation plan preparation guidelines are the provisions for "land-use and transportation controls," and the requirement that the states have an enforceable "new source site selection permit procedure."

1) The Clean Air Act provides that the Administrator of the EPA shall approve a state air quality implementation plan if

. . . it includes /among other things/ emission limitations, schedules and timetables for compliance with such limitations, and such other measures as may be necessary to insure attainment and maintenance of such primary or secondary standards; including, but not limited to, land-use and transportation controls. . . .

Thus, the EPA has the authority to require the states to implement both land-use and transportation controls. This mandate

is enervated, however, by the qualification that such controls be implemented where "necessary to insure attainment and maintenance" of air standards.²² Such a qualification essentially limits the application of land-use and transportation controls to Priority I air quality control regions. However, in these regions transportation controls are considered necessary to insure the attainment of ambient air standards while land-use controls are not.²³

The EPA defined the control strategy of implementation plans in the August 14, 1971, Federal Register as "a combination of measures designed to achieve the aggregate reduction of emission necessary for attainment and maintenance of a national standard. The EPA then outlined certain control strategy measures that the states could consider. Included among these control measures are:

. . . closing or relocating of residential commercial, or industrial facilities.

Changes in schedules or methods of operation of commercial or industrial facilities or transportation systems, including, but not limited to, changes made in accordance with standby plans.

²²42 U.S.C. #1857

²³Automobiles are the major polluter in urban areas, and thus, in most of the Priority III areas, transportation controls could be applied to abate or prevent pollution by limiting the numbers and the mobility of automobiles. Land-use controls might be applicable for the attainment of air standards within already developed regions (by keeping pollution sources like cars or industry out of a particular area). However, it would be necessary for such land-use controls to be a part of an accepted state land-use plan. Land-use controls applied only to local problem areas would encourage unplanned and uncontrolled development adjacent to those local areas.

Measures to reduce motor vehicle traffic, including, but not limited to, measures such as commuter taxes, gasoline rationing, etc.

Expansion or promotion of the use of mass transportation facilities through measures such as increases in the frequency, convenience, and passenger-carrying capacity of mass transportation systems or providing for special bus lanes on major streets and highways.

Any land-use or transportation control measures not specifically delineated herein.²⁴

The EPA is currently assisting Denver and Salt Lake City in developing transportation controls designed to help the two metropolitan areas meet national ambient air quality standards. The May 31, 1972, Federal Register sets February 15, 1973, as the deadline for these cities to have selected an "appropriate transportation control alternative" to fit their states' air implementation plans. The Register further states that by December 31, 1973, both Colorado and Utah must have the legislative authority ". . . needed for carrying out the required transportation control alternative(s)." Thus, the cities have the authority to develop their transportation control strategies, the states have the authority to implement these strategies, and the EPA has the authority to review the cities' strategies and ensure that the states adopt the enforceable procedures necessary to implement these strategies; but, the EPA also provides the technical planning assistance that is necessary to develop proper transportation

²⁴Federal Register, August 14, 1971.

control strategies. It should be noted that, although this is a relatively new area for the EPA in that the feasibility of utilizing transportation controls to achieve air quality standards is still under review and analysis (i.e. the six-city transportation study). Region VIII has two full-time personnel working closely with Salt Lake City and Denver to develop the necessary transportation controls.

In Region VIII, no land-use control measures have been written into State implementation plans, especially not any measures that would, as the EPA suggests, close or relocate residential, commercial, or industrial facilities. It is obvious that the EPA has never seriously considered land-use controls as a viable air pollution control technique. The EPA was careful to include in its Federal Register guidelines a stipulation that:

Nothing in this part [Part 420 of Chapter 42, Code of Federal Regulations - implementation plan preparation guidelines] shall be construed in any manner: . . . (d) To encourage a state to prepare, adopt, or submit a plan [implementation plan] without taking into consideration the social and economic impact of the control strategy set forth in such plan, including, but not limited to, impact on availability of fuels, energy, transportation, and employment.²⁵

This stipulation effectively negates any possibility of the states incorporating strong land-use controls into their air quality implementation plans.²⁶

²⁵Ibid.

²⁶The political pragmatics of state government would prohibit the relocating or closing of residential, commercial, or industrial facilities because of the cost of such measures to business and their undoubtedly adverse effect upon employment. Such considerations would also kill other types of strong land-use controls.

Thus, the EPA included token representation of land-use controls in its implementation plan preparation guidelines. Although such controls would obviously be difficult to implement in highly polluted air quality control regions, they certainly would have proven to be more effective for meeting air standards than any of the current implementation plan processes or controls. Furthermore, it would be relatively simple for land-use controls (i.e. comprehensive land-use planning, selective zoning, open space preservation, etc.) to be effectively applied to future growth centers either within or adjacent to established Air Quality Control Regions.²⁷ Applying land-use controls to future growth areas is also in tune with the EPA's general control strategy requirements.

In any region where existing (measured or estimated) ambient levels of a pollutant exceed the levels specified by an applicable national standard, the plan shall set forth a control strategy which shall provide for the degree of emission reduction necessary for attainment and maintenance of such national standard, including the degree of emission reduction necessary to offset emission increases that can reasonably be expected to result from projected growth of population, industrial activity, motor vehicle traffic, or other factors that may cause or contribute to increase emissions.²⁸

²⁷It can be argued that the current new source site selection permit procedure provides the necessary control for future growth areas, but this permit procedure is no substitute for comprehensive land-use planning and controls.

²⁸Federal Register, Saturday, August 14, 1971 (p. 15487).

The EPA requires that states include in their air implementation plans an enforceable procedure through which new air pollution sources can be controlled using a permit system which, among other things, regulates new source site selection.

. . . The Administrator shall approve such plan [state implementation plan], or any portion thereof, if he determines that it was adopted after reasonable notice and hearing and that--
(D) it includes a procedure, meeting the requirements of paragraph (4), for review (prior to construction) of the location of new sources to which a standard of performance will apply.

. . . The procedure referred to in paragraph (2)(D) for review, prior to construction or modification, of the location of new sources shall (A) provide for adequate authority to prevent the construction or modification of any new source to which a standard of performance under Section 111 will apply at any location which the state determines will prevent the attainment or maintenance within any air quality control region (or portion thereof) within such state of a national ambient air quality primary or secondary standard . . .

These sections of the Clean Air Act provide the tools for enforcement of the national ambient primary and secondary air quality standards as they apply to future development. The states are required to prohibit the siting of any new air pollution sources that would "prevent the attainment or maintenance" of ambient air standards for any air quality control region within that state. Since this requirement is aimed at enforcing ambient air standards, its land-use ramifications are an extension of those described in section 2 of this report (Ambient Air Quality Standards). The states consider the construction or modification of air pollution

sources only as these new sources affect air quality within their particular area or air quality control region. For example, the Anaconda copper smelter in western Montana emits approximately 1,000 tons of sulfur dioxide per day. The proposed 89 percent emission control would cut this amount to 100 tons per day.²⁹ The Anaconda operation is so large, however, that it would still be polluting an entire air shed the size of a circle with an 8 to 10 mile radius, having the Anaconda plant as its center. The state, in an attempt to maintain ambient air quality standards, would be forced to prohibit, through the new source site selection permit procedure, any new sulfur dioxide emission sources, even those in compliance with the new source performance standards, from locating within the air shed already polluted to capacity (the primary ambient air standard level) by Anaconda. Therefore, the new sulfur dioxide emission sources would be forced to locate in clean air sheds adjacent to the already polluted area. In this manner, industries are forced to consume more land and pollute more air than if they were concentrated within a defined area. Obviously, this dispersion of industry will result in an increased rate of land degradation. New roads will be built to connect the industries with their necessary resources or markets. The increased job opportunities, along with the enhanced transportation facilities that the industries have provided, will in turn

²⁹The 89 percent emission control has been promulgated by the EPA for Anaconda, but the company is questioning the legality of and necessity for this degree of control. The 89 percent control represents the best practicable emission control.

bring more people and added development to the areas around the dispersed industries. If industries locate near areas that are suitable for recreational development (i.e. the Rocky Mountain area), those areas will be more readily consumed by speculators and developers. The net effect of dispersing industry throughout an ecologically or aesthetically unique region is the mass development and subsequent degradation of a region's total resources, including the land which is the most basic and valuable resource. This dispersion of industry also results in the use of relatively large tracts of land for single purposes (i.e. one industry per air shed--Anaconda) which encourages the development of dangerously simple, monodependent economic bases. These simple bases create a very unhealthy economic atmosphere that has far-reaching effects upon the people whose lives depend on the success of a single industry.³⁰ In Region VIII no state has yet denied an industry the permit (new emission source site selection permit) necessary to construct or modify an emission source. However, if the projected growth for the region is realized, the site selection permit procedure will become an important air quality and land-use control. The permit procedure will become especially important to metropolitan areas as they work to comply with the national primary ambient air quality standards by the national deadline. Of particular interest will be how the EPA and, to a lesser extent, the states decide to define a new emission source. A

³⁰An unhealthy situation exists where a small town depends upon one industry for its livelihood. The town is forced to accommodate it at all costs and if it relocates or is unsuccessful, the town is destroyed.

liberal definition would include parking lots, highways, athletic stadiums, and possibly apartment complexes. The metropolitan air quality control regions that are close to the national primary ambient standards might be forced to ban parking lots, highways, etc. from the core of their region. The land-use effects of such a ban are difficult to predict, but there would seem to be at least two basic possibilities. If complex emission sources like parking lots were banned from a metropolitan area, that metropolitan government would be forced to implement an extensive and highly efficient mass transportation system; or, companies and commercial establishments would be obliged to locate on the perimeter of the metropolitan area where the air pollution that normally accompanies such facilities would not adversely affect the air quality of the metropolitan area.

Recommendations

The EPA should:

1. Thoroughly evaluate the land-use ramifications of its promulgation of standards and procedures and then develop a set of land-use priorities which could work in conjunction with air quality requirements. This could be justified on the grounds that the EPA has the authority and responsibility to protect the total environment.
2. Consider all complex air pollution sources (parking lots, shopping centers, stadiums, etc.) in any air quality control plan, especially with regard to the new source site selection permit procedure.

3. Require those Air Quality Control Regions which will not meet the standards by 1975 to incorporate land-use controls into their control strategies.

4. New Source Performance Standards

a. Pursuant to section 111 of the Clean Air Act, as amended, the EPA promulgated a set of regulations in the August 17, 1971, Federal Register establishing standards of performance applicable to stationary sources within five categories; Fossil Fuel Fired Steam Generators, Incinerators, Portland Cement Plants, Nitric Acid Plants, and Sulfuric Acid Plants.

b. These standards supposedly are based on the implementation of the best practicable control technology and represent levels of pollution which will not "contribute significantly to air pollution which causes or contributes to the endangerment of public health or welfare."³¹ The land-use impact of these standards is similar to that of the ambient air standards; for in many cases, these new source performance standards encourage the dispersion of industry. If the new source performance standards for 3,000 megawatt, fossil fuel fired steam generators, for example, allow for only one-sixth the emissions of a currently operating 3,000 megawatt power plant, a power company desiring to generate 3,000 megawatts may well construct six new 500 megawatt plants dispersed over a wide area instead of installing the costly

³¹Federal Register, August 17, 1971.

pollution control devices (if even available) necessary to cut by five-sixths the emissions from a single new 3,000 megawatt power plant located in a confined area. Spreading these plants out over a larger area would result in new roads connecting the plants with their fuel, more power lines distributing the electricity to the users, and more communities to support the individual plants. The total effect would be more pollution and land degradation than would result from the construction of a single large operation.³²

Recommendation

The Region VIII EPA should evaluate the land-use impact from the enforcement of new source performance standards in the Region, especially with regard to new power plants.

5. Air Program Grants

a. The discussion of Air Program Grants in this section considers the purpose and land-use impact of the EPA's Program Grants. The emphasis here is on the EPA's role in reviewing grant applications and in assisting the grantees to implement their programs. Section 105A of the Clean Air Act authorizes the EPA to provide "grants to air pollution control agencies" to defray up to one-half the cost "of maintaining programs for the prevention and control of air pollution or implementation of national . . . air quality standards." In reality, these grants are the main source

³²This example has been purposefully oversimplified to explain a possible net impact.

of funds to states for their enforcement, monitoring, and planning activities that are associated with the implementation plans.

b. All six state air pollution control agencies in Region VIII, plus six local agencies in Colorado and three in Montana, are funded in part under this grant program. The applicants are required to complete an application form which is designed to provide the EPA with, among other things, a description of the local agency's accomplishments during the previous year and their objectives for the coming year. Some of the descriptions that the applicants are required to complete include:

Describe the overall immediate (during the next year) air pollution control program objectives deemed appropriate to the solution of the air pollution problems identified /For the applicants' jurisdiction/.

Describe the overall long-range (specifying the period) air pollution control program objectives deemed appropriate to the solution of the air pollution problems /For the applicants' jurisdiction/.

Describe the comprehensive program to be used to prevent and control air pollution in the area under the applicants' jurisdiction.³³

In some cases, the applicants' responses to these questions were rather ambiguous and indefinite, which probably represents the lack of planning in the state air pollution control offices.

³³EPA Grant application form.

Recommendation

Since the air implementation plans impact land-use in several important ways (see section 3), and since the air program grants serve to enact the implementation plans, the EPA should require applicants with jurisdiction over Priority I areas to be more specific in describing what they propose to do; and, where necessary, the EPA should require the applicants to delineate proposed land-use and transportation controls and planning (especially Denver and Salt Lake City.)

CHAPTER IV. WATER POLLUTION CONTROL PROGRAMS

1. General

a. The EPA's water programs, which include program, planning, and construction grants, affect land-use within Region VIII more than any other of the Agency's programs. This land-use impact can either be subtle, in the case of program and planning grants, or obvious and direct, in the case of construction grants. Furthermore, the EPA water quality grants are coordinated, through a Joint Agreement for Interagency Coordination in Planning and Development between the EPA and HUD, with HUD planning certification requirements. This agreement is designed to incorporate HUD and the EPA grants into a comprehensive approach that will achieve necessary water quality and provide for proper planning mechanisms, including land-use planning.

b. The EPA-HUD agreement pervades the EPA's water programs and is, thus, analyzed separately as it affects land-use in all the granting activities. But, the different water grants are also considered individually because of their unique land-use impacting elements.

2. EPA-HUD Agreement

a. The joint EPA-HUD agreement signed June 7, 1971, by William Ruckelshaus of the EPA and Samuel Jackson of HUD provides the basis for a system through which each agency's water management planning and construction grants may be coordinated in a

comprehensive fashion. Such coordination should theoretically provide, as the Agreement states:

. . . for coordinated administration of comprehensive and functional planning and construction grant requirements applicable to:

- (a) Policy and coordinative planning;
- (b) Integrated functional planning for water quality; and
- (c) Development of fully integrated wastewater collection and treatment systems. The grants awarded by HUD and EPA /For HUD Basic Water and Sewer Facilities Grant Programs, HUD Comprehensive Planning Assistance Grant Programs, EPA Construction, Program and Planning Grants/ must meet the same administrative and regulatory requirements with respect to comprehensive and functional planning, and programming of wastewater collection and treatment systems.

A realistic interpretation of the above provisions suggests that the EPA and the HUD are required to coordinate the planning and construction grants that both agencies award.

b. The following programs of both the EPA and HUD are covered by this agreement:

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

- 1. Basic Water and Sewer Facilities Grant Program Section 702 of the Housing and Urban Development Act of 1965, as amended - 42 USC 3102(C).
- 2. Comprehensive Planning Assistance (701) Grant Program; Section 701 of the Housing Act of 1954, as amended - 40 USC 461.

ENVIRONMENTAL PROTECTION AGENCY

- 1. Construction Grants for Wastewater Treatment Works; Section 8 of the Water Pollution Control Act, as amended - 33 USC 1158.
- 2. State and Interstate Program Grants; Section 7 of the Water Pollution Control Act, as amended - 33 USC 1157.

3. Comprehensive River Basin Planning Grants;
Section 3(c) of the Water Pollution Control
Act, as amended - 33 USC 1153(c).

c. The EPA-HUD Agreement requires that:

Interim Basin Plans be completed by October 1, 1971; and that fully developed Basin Plans be completed by July 1, 1973; and, Area and Organization Comprehensive Planning and Water/Sewer Functional Planning Certifications by HUD, including interim areawide water quality plan, be granted by October 1, 1971; and, Area and Organization Comprehensive Planning and Water/Sewer Functional Planning Certifications by HUD, including fully developed areawide water quality plan (containing a complete land-use plan element), be granted by July 1, 1973.³⁴

d. The agreement's language seems to be very clear and precise, but its actual implementation has been and is somewhat complicated and unpredictable. Although the agreement covers HUD's Comprehensive Planning Assistance (701) Grants, in Region VIII neither these Grants nor the plans that are developed from them are reviewed by the EPA. This is due to the unavailability of sufficient planning personnel in the regional office; that is, man-hours are consumed by tasks of higher priority as determined by Washington. The absence of review is an important factor because

³⁴This national agreement is subject to amendment by the regional agreement.

every state, several metropolitan areas (9) and cities over 50,000 (10), plus two Indian Reservations in the region, receive funds from this HUD Granting Program. It is also important because the HUD Comprehensive Plans require a land-use element.

This land-use element:

a) Must set forth the /Area Planning Organization's/ recommendations regarding the future land-use distribution most consonant with areawide goals and objectives. It must indicate recommended locations and densities of at least the broad use categories such as residential, commercial, industrial, institutional, open space, etc; and in addition, identify special user or density characteristics of major manufacturing operations, large residential or commercial developments, etc.

b) . . . as a minimum, the preliminary future land-use element must be based on and take into account:

1. A quantitative distribution of present and future population and economic activities projected approximately twenty years into the future.

2. Pertinent transportation considerations, present and future, such as the location and type, of 1) principal highway facilities, 2) mass transit corridors and facilities, 3) major airport facilities, 4) navigable waterways and port facilities, and 5) significant freight transfers and terminal facilities.

3. The general location of major public facilities, such as large parks and recreational facilities, institutions of higher learning, and major hospitals and health care facilities.

c) Must set forth the major steps necessary for implementing its recommendations and identifying how, when and by whom those steps are to be taken. These recommendations must include the identification of steps necessary to eliminate inconsistencies between local land-use controls and the areawide land-use element.

e. The HUD planning certification requirements or guidelines

(see Appendix I) for Comprehensive Plans are used simply as a check list. HUD does not consider the quality of the Comprehensive Plans. HUD suffers from the same manpower shortage that hinders the EPA's review process. But, as stated before, the national agreement between HUD and the EPA seems to give the EPA authority to review these Comprehensive Plans, especially the HUD 701 Grants for comprehensive planning, according to the EPA water management planning guidelines. These guidelines would allow the EPA to review the quality of the plan, and review an environmental assessment of its future implementation. Thus, with a realignment of priorities or an expansion of manpower, the EPA could guide states, metropolitan areas, large cities (over 50,000), and Indian Reservations in developing proper land-use plans.

f. In addition to the national EPA-HUD agreement, each regional EPA and HUD office developed their own agreements, outlining the implementation process and modifications of the national agreement. In Region VIII, this agreement contains a section which allows, prior to July 1, 1973, the EPA and HUD to waive by mutual consent the agreement requirements for non-metropolitan areas: 1) if the need for such a waiver is great and immediate; and 2) if there are "assurances that the subject non-metropolitan area will meet both HUD and EPA requirements by July 1, 1973." In view of this criteria for a waiver, it would seem that the EPA has failed to comply with the agreement requirements before

approving their water treatment facility grants to non-metropolitan areas. In some non-metropolitan areas, where the EPA has implemented this waiver process, it will be a miracle if the area meets the requirements for full and complete basin plans by July 1, 1973. Thus, in certain cases, there is no meaningful planning being done, especially not land-use planning, before the EPA approves their wastewater treatment facility construction grants. However, strict compliance with this EPA-HUD agreement would conflict with the EPA's immediate goal of abating and rectifying pressing water pollution problems.

g. It is important to note that, although to date there has been apparent deficiencies in the implementation of the EPA and HUD agreement, the agreement may produce an increased emphasis on coordinated planning within and between the two agencies. In Region VIII, the EPA water planning section is attempting to institute a planning relationship with HUD through which area planning organizations that receive planning grants from either agency will be required to use the monies received to satisfy both agencies' planning requirements. If instituted, this inter-agency relationship would represent a significant improvement over the coordination provided by the original EPA-HUD agreement.³⁵

³⁵The original agreement required the EPA and HUD to simply coordinate each agency's plans which are very different (EPA plans for wastewater treatment facilities; HUD plans for water and sewer facilities). But the system proposed by the Region VIII water planning personnel would allow the APOs to develop, when funded by either EPA or HUD, a comprehensive plan for water management (including water mains, sewers, treatment facilities) which would satisfy both agencies' planning requirements.

Recommendations

The national EPA-HUD agreement seems to be the opening through which the EPA could realize more land-use authority. Indeed, in the areas of the agreement where the EPA is ignoring its requirements, the agency is proliferating unplanned growth and subsequent or concurrent improper land management. Therefore, the EPA should:

1. Reevalue its priorities of resource allocation to comply with the agency's mandates and agreements.
2. Provide the planning branch with the manpower necessary to review HUD Comprehensive Planning Grants (701 Grants).
3. Reevalue its Region VIII agreement with HUD and develop a more detailed process for implementing the requirements of the agreement.
4. Explicitly define the conditions for waivers to the agreement requirements and then rigorously enforce these conditions.

3. Section 7 Grants

a. All six states within Region VIII are currently using funds for their water quality programs from the EPA programs grants authorized under Section 7 of the Federal Water Pollution Control Act, as amended. The states use these grants to help defray the cost of hiring personnel, monitoring and enforcement procedures, public relations, and the general mechanics of their

water pollution control programs. The states must resubmit a yearly application, which consists of a one-year work plan, to the EPA for these program grants. Included, among other things, in the states' work plans is the state criteria used for establishing the priority list of cities or sanitary districts to receive wastewater construction facility grants from the EPA.

b. The EPA reviews these work plans with the state criteria as provided by Section 8 of the FWPCA. The states base their construction grant priority criteria on: 1) the degree of pollution; and, 2) the financial need of the cities or sanitary districts applying for wastewater treatment facilities.

c. Although not applicable to Region VIII at this time, the states' wastewater treatment facility construction grant priority list may define, in essence, growth patterns and subsequent land use. A city that is growing quickly may be placed higher on the state priority list because of a combination of present and projected water pollution problems, whereas a smaller, slower-growing city with a greater on-hand water pollution problem would have less priority.

Recommendations

The Environmental Protection Agency should:

1. Evaluate the states' work plans according to the EPA's Water Quality Management Planning general guidelines and require the states, where definite planning is being done, to prepare an environmental assessment on the proposed implementation of such planning.

2. Determine if a state's construction grant priority criteria is consistent with state, local, and regional land-use plans and objectives.

4. Section 8 Grants

a. The Section 8 Wastewater Treatment Grants as administered by the EPA affect land-use in a more direct fashion than any of the EPA's other grants. These wastewater treatment grants or construction grants allocate monies to the states on a matching formula which provides proportionately more to states with greater populations and lower per capita incomes. These grants are of two types: grants for interceptor sewers, and grants to construct wastewater treatment facilities. Approximately 90% of the wastewater treatment facility grants are awarded to municipalities of less than 1,000 people where the land-use impact upon the area may be considered minimal. The remaining ten percent of these grants, however, are either for interceptor sewers or large treatment facilities, some of which may treat a large volume of waste from private industry (Lead-Deadwood Sanitary District No. 1 Project; see Appendix V). These grants, therefore, often have both a tremendous direct land-use impact through acquisition of land for construction and also a significant impact upon future development and land management within the facility service area through the industrial and economic expansion that is associated with the enlarged services.

Over 80% of Region VIII's budget is involved in Section 8 Wastewater Treatment Facility Construction Grants. This illustrates the emphasis that the EPA Headquarters places upon the construction grant program; a yardstick, perhaps, of the EPA's pollution control effort as far as Headquarters is concerned. The applicants for construction grants must submit an environmental assessment of the impact of their proposed projects. In Region VIII, the EPA requires these environmental impact assessments to be prepared according to a set of specific guidelines, entitled "Interim Guidelines for Preparation and Review of Environmental Assessments for Municipal Wastewater Treatment Projects" (see Appendix 10). The purpose of these guidelines is to "evaluate and document the effects of a proposed project on all aspects of the environment." There is a specific section that contains questions that must be answered about land-use, such as "how the proposed project will encourage or discourage residential, commercial, and industrial growth within the service area; the type and amount of land that will be affected permanently by construction and operation of the project;" and another asking if the ". . . project effects on growth conform with land-use plans for the area." However, applicants are extremely negligent in satisfactorily completing these applications according to the guidelines; therefore, land-use impact, as an environmental assessment is, in practice, almost ignored. The EPA could, of course, refuse to approve the grants on the basis of such negligence; yet, such refusal would be inconsistent with the EPA's national priorities.

b. The EPA grants construction monies on a matching three level basis: 30%, 40%, and 50%. These three levels are used by the EPA as an incentive to the states to adopt water quality standards that are as stringent as interstate water quality standards. Where the incentive is successful, it limits somewhat the industrial expansion of an area. A state, for example, might set high water quality standards so that it can take advantage of the EPA higher matching funds level; a heavily polluting industry which is not willing to implement available control technology will, therefore, find little advantage in locating in that state and would pursue the land and water of another state that has not set such high standards for its intrastate waterways.

c. In the June 9, 1972 Federal Register, guidelines were promulgated for "determining the desirability of wastewater treatment facility projects," and the EPA requirements for wastewater treatment facility (Section 8) construction grants, which include "basin control" and a "regional and metropolitan plan." The guidelines for determining the desirability of proposed construction projects contain a consideration of "the public benefits to be derived by the construction of the project." It is conceivable that a liberal interpretation of this section could include proper land-use to be in the public's benefit.

d. The basin control requirement for Section 8 construction grants is as follows:

No grant may be awarded unless the Regional Administrator

determines, based on information furnished him by the appropriate state or interstate agency having jurisdiction responsibilities for the area of concern, that the project is included in an effective current basin-wide plan for pollution abatement in accordance with applicable water quality standards.³⁶

e. There are interim procedures, however, available to the applicants prior to July 1, 1973, as outlined and provided for in the EPA Water Quality Management Planning guidelines. These interim procedures "serve the purpose of reconciling lead time for planning with the existing implementation schedules and flow of construction projects." But the guidelines go on to qualify this modification by stating that "at the same time, interim procedures must assure that immediate and near future decisions on construction projects as well as on development proposals affecting future land-use and water quality reflect the best available planning judgment and evaluation." The Region VIII EPA, in many cases, has ignored these requirements for obvious reasons. There are areas that are receiving, and that have received, construction grants with little if any previous quality planning. Most localities within Region VIII simply do not possess the planning expertise necessary to satisfy the EPA's planning requirements. Therefore, the Region VIII

³⁶ Federal Water Pollution Control Act as amended.

EPA can only ask many localities to submit project justifications for their wastewater construction projects. Subsequently, the EPA refers to this project justification as an interim plan. Regretably, the project justifications are in no way interim basin plans as defined in the EPA Water Quality Management Planning guidelines and, therefore, there are no plans, including land-use plans, being developed by these areas. The result is often uncontrolled land development and industrial and urban expansion with their subsequent air and water pollution.

f. The requirement for a regional and metropolitan plan for wastewater treatment facility construction grants, as recorded in the Federal Register, is that:

No grant may be awarded unless the Regional Administrator determines that the project is included in an effective metropolitan or regional plan developed or in the process of development, and certified by the Governor or his designee as being the official pollution abatement plan developed or in the process of development for the metropolitan area or region within which the project is proposed to be constructed. These metropolitan/regional plans are required to consider, as promulgated in the EPA Water Quality Management Planning guidelines, "the relationship of the objectives to the area-wide goals, objectives and land-use elements of the area-wide comprehensive planning as adopted by the APO [Area Planning Organization]." Also to be considered are the "present and proposed land-use and zoning; the possibilities for future expansion and

the need for new treatment sites," and "the current land-use in the context of the limitations or opportunities it may place on growth." Most important, however, is the requirement of alternatives:

Alternatives should be examined with respect to their potential to upgrade urban areas, establish parks or other programs and to increase public use and enjoyment of environmental resources as well as their effect on water quality alone. Compatibility with plans of other Federal agencies and Land Use Plans, and Enforcement Conference recommendations should be assessed as should the relevance of such factors to goal attainment.

The paragraph further states:

When adverse effects on land or air resources cannot be avoided they should be included in the analysis in such a manner that the abatement strategy will minimize them.

The guidelines also direct that "the pollution control plan for the M/R area from the alternatives...should here be explained with emphasis on," among other things, "control of wastewater quantities through zoning and/or planned growth." In Region VIII, very few of these M/R plans are developed to any degree of detail and, thus, the EPA has very little planning data to judge the feasibility of wastewater treatment project proposals. The deadline for the fully developed M/R plans is July 1, 1973, but it is doubtful that many planning organizations

within the Region will meet this deadline. Therefore, it will be some time before proper land-use planning will become a part of the EPA construction grant programs.

g. Since March, 1972 the Region VIII EPA has prepared an environmental appraisal of all proposed wastewater construction projects. These appraisals evaluate the possible environmental impact of the proposed construction grants and serve as the basis for the negative/positive determinations.³⁷

Recommendations

Since the greatest portion of the EPA's regional budget is involved in Section 8 Construction Grants, and because these grants effect land-use both directly and indirectly, the EPA should:

1. Provide the Region's planning branch with more personnel to assist the states with their planning requirements.
2. Develop a set of land-use priorities and guidelines with which to judge the total environmental acceptability of proposed wastewater treatment projects.
3. Write more environmental impact statements on proposed treatment grants.
4. Require applicants to furnish more complete and detailed descriptions of the environmental impact of their proposed projects. This could be accomplished if the EPA would simply

³⁷ A negative determination means that the EPA has determined that the proposed grant will have minimal environmental impact and that there is no need for the preparation of an EIS. A positive determination means that there will be a significant impact and that an EIS should be prepared.

enforce their own interim guidelines for Preparation and Review of Environmental Assessments for Municipal Wastewater Treatment Projects.

5. Require regional and metropolitan plans to be completed to such a degree, including alternatives, that the desirability and feasibility of construction grants to areas within such planning districts may be properly evaluated by the EPA.

5. Section 3 Grants

a. Section 3 of the Water Pollution Control act, as amended, provides up to 50% of the cost to a planning agency for the development of a "comprehensive water quality control and abatement plan for a /river/ basin." In Region VIII, there are three river basin planning districts receiving funds under these Section 3 grants, while three others are currently being considered for funding. The EPA in Region VIII approves these grants to those river basins which it considers to be in the greatest need of pollution abatement, prevention, and control. This may include basins which, in the EPA's judgment, appear to be ripe for development or appear to be developing rapidly (i.e., Steamboat Springs, Colorado). The EPA Water Quality Management Planning guidelines explain what should be included and considered in the final river basin plans:

"The description /assessing the water and related land resources of the basin⁷ should include a discussion, as delineated below, of the relation of these resources to the demography and economy

of the basin and the impact on water quality . . ."

Such delineation includes (quoted in part):

(?) Social and Economic Analyses. Land use, population, industrial and agricultural development should be analyzed as they may affect the water resource.

(4) Water Quality. A discussion of water uses, water quality levels, and quality criteria. Existing water and related land uses should be delineated and related to the economy of the basin. The impact on water quality of increased utilization of the water and related land resource should be assessed in light of the economic analysis. Existing water quality levels for all parameters should be assessed in terms of their impact on the water uses and on the general aesthetic value of the water and adjacent lands. This assessment should include the definition of water quality levels required to protect or enhance the utilization of the waters.

These planning guidelines also require that the basin plan include specific consideration of "alternatives for meeting the water quality objectives for [The] basin." One of the alternatives mentioned is the possible "control of wastewater quantities through zoning and/or planned growth both for type and amount of expansion."

b. While the planning district is developing the basin plan, it is required to assess the environmental impact that would result from the plan's implementation. The EPA has a set of guidelines

to be followed by the planning organization as it evaluates this environmental impact. These guidelines, Environmental Assessments for Effective Water Quality Management Planning (see Appendix II), state that such an evaluation "should include specifics of the area; the resources involved; physical changes; alterations to ecological systems; and changes induced by the proposed action and population distribution, population concentration, and the human use of land (including commercial and residential developments), and other aspects of the resource base such as water and public services." These guidelines also discuss the importance of considering land-use:

Land is used by man for agricultural production, residential and industrial development, resource development, and open space conservation. Each of these uses have been mismanaged on one occasion or another and has contributed to environmental problems. Effective land-use management is a key to environmental quality enhancement. Some of the questions that should be asked concerning land include: Do construction practices at the plant site cause soil erosion? Is the treatment plant complex compatible with adjacent land uses? Are the solid waste disposal practices for the mine spoils adequate?

An interim set of guidelines used previous to those discussed

above were promulgated by the EPA for basin planning organizations funded by Section 3 grants, on "incorporating environmental consideration" into the development of basin plans, and required planners to discuss several specific land-use questions. These guidelines, Interim Guidance for Preparation and Review of Environmental Assessments for Water Quality Management Plans (appendix), ask if the implementation of the comprehensive river basin plan being developed would: 1) "induce urban development consistent with the development trends or plans of the area;" 2) if the plan "strive(s) for a balance between population and the capacity of the renewable resources;" and 3) if "the sites permit enough land to develop a buffer area to screen the [p]roposed plan's project." These guidelines also require the discussion of "types and amounts of land that would be irreversibly used by facilities included in the plan." These interim guidelines are perhaps superior to the "Environmental Assessments for Water Quality Management Planning" that subsequently have been adopted by the EPA.

Recommendations

When the EPA funds a river basin planning district to develop a comprehensive basin plan, it is actually allowing that planning district to help define the future growth and land-use within its basin. Therefore, the EPA should:

1. Provide more money to APOs for basin plans that also satisfy HUD comprehensive planning requirements.
2. Increase the Region's planning staff to assist the APOs in developing basin plans.

3. Constantly review the environmental impact, as outlined in its guidelines, of any planning that has been finished as a part of the complete basin plan.
4. Require the basin planning organizations to supply sufficient information in their work programs to allow the EPA to discern the general direction that the basin planning will take; and then
5. Make a preliminary evaluation of the land-use effects of a basin planning grant for that basin.

CHAPTER V. ENVIRONMENTAL IMPACT STATEMENT REVIEW

1. General

a. The EPA's review of environmental impact statements in Region VIII has a secondary but profound influence upon both the consideration other Federal agencies give to land-use and the eventual land development impact from actual projects. The Environmental Impact Statement Review section of the EPA is also responsible for writing any Environmental Impact Statement that may be required for the EPA's own Wastewater Treatment Facility Construction Grants. Thus, the EPA's environmental impact review function consists of an analysis, including land-use considerations, of other Federal agencies' environmental impact statements and the evaluation of the EPA's own projects that impact the environment. The former analysis may be the EPA's most important authority for land-use control because it encompasses all federal activity which could impact land-use in the entire region. Often, the EPA's comments will persuade other Federal agencies to reconsider, change and even cancel proposed projects (i.e., Castlewood Dam, Big Sioux Project). Since many federal projects involve land development, the EPA, when influencing project changes, is directly affecting land utilization.

b. This chapter discusses the EPA's Region VIII Environmental Impact Statement (EIS) preparation and review section

as its activities impact land-use. Section 2 concerns the EPA's review of other Federal agencies' EISs, and Section 3 involves the EPA's responsibility to prepare EISs for its projects.

2. Environmental Impact Statement Review

a. The April 23, 1971 Federal Register outlines the general process that is to be used by all Federal agencies in preparing Environmental Impact Statements. The EPA, when reviewing impact statements, refers to these guidelines and tries to consider, among other things:

1. The description of the proposal; information, technical data, maps, etc.
2. The probable impact on the environment, both primary and secondary, including possible pollution which may result from improper land-use.
3. Any unavoidable adverse effects.
4. If there are well researched and described alternatives to the action which might eliminate some or all adverse effects.
5. The relationship between short-term uses and the maintenance for enhancement of long-term productivity.
6. Any irreversible or irretrievable commitment of resources.
7. The discussion of problems and objections raised by other Federal, state and local agencies and by private organizations and individuals in the review process and

the disposition of the issues involved.

These considerations are within the EPA's mandates and also the EIS reviewer the degree of flexibility that is necessary to properly evaluate environmental degradation that results from improper land-use. Although the EPA cannot require other Federal agencies to write environmental impact statements on their proposed projects, it can request that such statements be written; and, on controversial and/or important projects the Federal agency involved usually feels compelled to comply. Two avenues are open to the EPA for persuading other Federal agencies to consider the impact of their activity. The EPA can make public its comments on other Federal agencies' proposed projects; or, if agencies refuse to write an EIS on a proposed project, the EPA can apply pressures through regional, Washington, CEQ (Council on Environmental Quality) and public channels to influence the Federal agencies into writing impact statements.

b. Often, the EPA criticizes projects because of their impact upon residential, economic and industrial development with its concurrent land, air, and water pollution (i.e., Big Sioux Project, South Dakota); and many times, the EPA's review will cause an agency to modify or even abandon its proposed project (i.e., Castlewood Dam Project, Colorado). Normally, the EPA is reluctant about defining land-use problems in its environmental impact statement reviews because it has no authority to do so, but the EPA can and does

delineate the air, water, and solid waste problems that may evolve from improper land-use associated with proposed projects. For example, commenting on the Bureau of Outdoor Recreation's draft EIS on the staging of the 1976 Winter Olympic Games in Colorado, the EPA made several references to the adverse environmental impact on Colorado from possible Olympics-stimulated growth:

As the statement indicates, staging the winter Olympic Games in Colorado is likely to generate some measure of growth and development in the state beyond that which would be expected if the games were not held. Because this growth has the potential to cause further degradation of air and water quality in the Olympic area of influence, we urge that the Olympic planning effort incorporate comprehensive measures designed to minimize adverse environmental impacts associated with growth and development in Colorado.

On another proposed federal project, two Corps of Engineers dams (Big Sioux Project, see Appendix III), the EPA made a direct reference to land development without linking it to some other form of pollution. It commented that the Federal government, through its actions, should not be in the business of encouraging flood plain development. In still a different proposed project, (Castlewood Dam Project, see Appendix IV), the EPA's review of the EIS was so critical that the project was dropped. Thus, it is obvious that the EPA, through its review of EISs for proposed federal activity, often indirectly alters or stops federal projects that might have a degrading impact on the land.

c. Most important decisions that have far-reaching implication for environmental impact are made by Federal agencies long before an environmental impact statement is prepared. (i.e., perhaps, Colorado Oil Shale Development). Since many Federal Agencies write an EIS on a proposed project that they are determined to conduct, modifying or stopping proposed projects by criticizing the projects' EISs is a difficult, mostly ineffective and somewhat de facto method of protecting the environment from damaging federal activity. In recognition of this reality, the EPA impact reviewers in Region VIII are becoming involved more at an early stage of the decision-making processes of other Federal agencies. This is an attempt by the EPA to influence those Federal agencies that have a significant voice about the use of federal land and resources to give proper consideration to all environmental impacts before land and resource development decisions are made, and before agency resources are committed. The Region VIII EPA, in a preliminary accomplishment plan dated June 5, 1972 on "Environmental Impact Statement Review," proposed an aggressive approach towards environmental protection on the federal land within the Region. This plan is directed towards injecting environmental considerations into the decision-making process of other Federal agencies, as indicated below:

.../To/assist other Federal agencies in improving the administration of the EIS process, the

regional office will contact periodically an estimated 25 Federal offices responsible for the majority of EIS projects in the region. These discussions will focus on the planning process of other Federal agencies to identify with sufficient lead time, those projects for which impact statements should be prepared. Particular attention will be directed toward identifying proposed projects in critical priority areas. Controversial proposed projects will also be called to our attention through formal and informal contacts with the public.

Having identified projects for which impact statements should be prepared, the regional office will contact the other Federal agencies in writing, suggesting that an EIS be prepared.

For projects of major regional or national significance, the regional office will assist other Federal agencies in the administration and management of EIS preparation. These projects will be identified with sufficient lead time to plan for the commitment of resources.

Thus, the Region VIII EPA is attempting to promote proper Federal land management and appropriate consideration of environmental factors by ensuring that the EIS is an integral determinant in the decision-making processes of other Federal agencies.

Recommendations

Since improper land-uses result in far-reaching and diverse environmental problems, the EPA should:

1. Address more aggressively improper land management from federal projects described in Environmental Impact Statements.
2. Work at influencing more federal land management agencies at the decision-making level in order to introduce greater environmental and land-use concern into the total federal land management process.

3. Environmental Impact Statement Preparation

a. The EPA's environmental impact review section is responsible for preparing impact statements for the Agency's own projects. These statements consider land-use in much the same way that it is considered in the review of other Federal agencies' impact statements. When the EPA is reviewing its own projects, however, there may be a tendency to discount, because of immediate pollution problems, the long-range land-use and subsequent pollution problems that may develop from such projects (i.e., Final Environmental Statement, Lead-Deadwood Sanitary District No. 1, South Dakota).

b. Seemingly, this near-sightedness is the result of the combination of an eagerness in the regional office to satisfy the demands or desires of local residents or developers (to abate immediate though perhaps minor pollution problems) and pressure from the EPA Headquarters to keep the wastewater construction grant money flowing without interruption.

Recommendations

When the EPA evaluates its own proposed projects, it should:

1. Weigh equally the long-range impact of the project with its short-term benefits in terms of pollution abatement.
2. Consider all the land-use related pollution problems that could result from its proposed projects.

3. Write more environmental impact statements.

CHAPTER VI. OFFICE OF FEDERAL ACTIVITIES

1. General

a. The Federal Activities or Interagency Assistance Department of the EPA in Region VIII is located in the Air and Water Programs Branch. The Department's activities involve the enforcement of Executive Order 11507 along with providing technical assistance to other Federal agencies relating to environmental quality on federal land. Federal Activities in Region VIII has the potential for exerting an important influence on federal land management activities.

b. Since 32% of the Regional land area is owned by the Federal government, and since the pressure for developing this area's resources (i.e., Powder River Basin Coal Development, Four Corners area, Oil Shale, etc.) is increasing significantly, the Office of Federal Activities should become one of the primary regional EPA departments concerned with the impact of federal land-use activities on environmental quality.

2. Technical Review and Assistance

a. 90% of the Office of Federal Activities work load is the review of proposed wastewater treatment projects for federal installations. The balance of the work load is split between the review of proposed air pollution control devices for federal installations and providing technical assistance and advice to the major land management federal agencies within the Region, which include the Park Service, the Forest

Service, and the Bureau of Land Management.

b. The Federal Activities department reviews all the wastewater treatment projects that are proposed by all the different Federal agencies within the Region. It then establishes a general priority listing of proposed projects for each agency on the basis of where the proposed project is located with relation to the EPA's pollution priority areas and enforcement actions. This list is submitted to the OMB, which decides what projects should be referred to Congress for funding within each agency's annual budget. The land-use impact of these wastewater treatment projects is limited to the nature and extent of the development and recreation pressures on the area within which the project is proposed. The funding of a large wastewater treatment plant for a major national park, for instance, would have much more land-use impact than the funding of a plant for an isolated military installation. For the most part, development on federal land is more controlled than on privately owned land and the land degradation that results from development of federal land can best be influenced either through EPA cooperation with other agencies at the decision making level (see c. below) or through EPA's review of environmental impact statements (see Chapter 5).

c. The Office of Federal Activities major land-use impact is currently indirect and the result of the EPA assistance to the Forest Service in developing improved timber

leasing practices and in enhancing their general land management practices. The Office of Federal Activities is also trying to expand its influence over more of the Forest Service's activities by exerting pressure on the Forest Service to adopt a policy which provides for greater total fiber utilization on land leased for timber harvesting. Thus, the Office of Federal Activities is cooperating with the Forest Service in an attempt to influence the agency into adopting leasing guidelines which provide for more land resource protection and, concurrently, less soil erosion and water pollution and fewer solid waste problems on leased Forest Service land. Finally, the Office of Federal Activities is considering an investigation of both the over-grazing problems on leased Bureau of Land Management land and the affects of the Bureau's grazing lease requirements on land quality.

Recommendations

The Office of Federal Activities should:

1. Work with the Assistant for Planning and Evaluation to establish a specific list of major land-use problems on federal land within the Region, concentrating on those land-use problems that adversely affect, or are likely to adversely affect, environmental quality.
2. Expand its sphere of influence over those Federal agencies which have jurisdiction over the land-use

problems established under Recommendation (1).

5. Assist those Federal agencies in alleviating the improper land-uses and concurrently enhance the environmental quality of federal land.

CHAPTER VII. PLANNING AND EVALUATION

1. General

a. The Assistant Administrator for Planning and Evaluation in Region VIII has the responsibility for defining the more vital pollution program issues within the Region consistent with the EPA's pollution control mandates. From these program issues he establishes priorities which the EPA can realistically work toward with its limited resources. The product of this process is a set of accomplishment plans which the EPA uses as environmental quality goals.

b. The Assistant for Planning and Evaluation also administers in conjunction with the division personnel an ad hoc evaluation process designed to determine the progress which the Region has made toward its defined goals (accomplishment plans). Since the EPA's land-use impact depends on what the agency is trying to achieve, the Planning and Evaluation function is the basis for the land-use impact that results from those pollution control programs which rely upon regional emphasis.³⁸

2. The Planning Process

a. The process of establishing the Region's environmental quality goals and then planning how the Region's resources will be directed toward attaining those goals is vital to the

³⁸ Some of the EPA's pollution control programs allow for extensive regional emphasis (i.e., Federal Activities), while others (i.e., Air Programs) have very limited flexibility.

the EPA's land-use impact. If, for example, the regional office would choose a moderately polluted river basin with a stabilized population as one of its priority pollution areas over another relatively clean river basin under tremendous pressure for development, the EPA would focus its resources (i.e., Basin Planning Grants and Construction Grants) on the moderately polluted basin. The clean basin might be developed without planning and with little control. The result would be unnecessary land degradation with its concurrent air, water, solid waste, and noise pollution. The pollution control program emphasis in Region VIII, however, is either on areas that are heavily polluted or areas which are relatively clean and under heavy pressure for development (i.e., 3c Basin Planning Grants: Steamboat Springs, Colorado).

b. The general theme or goal of pollution prevention seems to run through most of Region VIII's planning. Thus, one of the main objectives of many accomplishment plans and preliminary accomplishment plans is the identification of potentially consumptive and degrading land-uses along with the prevention or control of land-uses that represent or result in other forms of pollution.

3. The Evaluation Process

a. The purpose of the evaluation process in Region VIII is to measure the Region VIII EPA's progress towards achieving the goals represented by its accomplishment plans, to

determine which regional programs are most successful, and to define what is needed to make unsuccessful programs more effective in achieving desired goals. The Region VIII resources are evaluated in terms of what amount of environmental protection or enhancement can be realistically achieved.

b. In Region VIII, the EPA's resources are often focused on pollution prevention measures which usually involve the identification and control of potential improper land-uses. Therefore, the EPA's planning and evaluation mechanism has involved the Region VIII Headquarters in influencing proper land-use management techniques (see Environmental Impact Statement Review, Chapter V).

Recommendations

See Chapter II, Administrative Recommendations.

CHAPTER VIII. SOLID WASTE PROGRAMS

1. General

a. The EPA's current solid waste programs in Region VIII have a limited and somewhat short-term land-use impact. This impact is the result of the Agency's solid waste planning grants authorized under Section 207 of the Solid Waste Disposal Act, to 1) states and 2) regional or local agencies. The EPA's technical assistance to other federal agencies also impacts land-use.

b. The direction of the region's solid waste programs is very much dependent upon the national headquarters' perspective, which, to date, has been a strong limiting factor to the comprehensiveness of the region's programs.

2. Solid Waste Planning Grants

a. All six states within Region VIII are receiving funds from the EPA through its solid waste planning grants to develop comprehensive state plans for the disposal of solid wastes. These plans are intended to bring about the abandonment of open dumps and their related air, land, and underground or surface water pollution. The grants to regional or local agencies have basically the same purpose, but are usually used to develop more detailed planning of pick-up systems and landfill sites. These planning grants are the major, if not only, source of funds available to state and local agencies for the planning and management of solid waste disposal.

b. The EPA, through incentive of its planning grants, strongly encourages state and local agencies to replace open dumps with sanitary landfills (Mission S000). To further influence this transition, the EPA provides planning guidelines with their grants to solid waste planning agencies. These guidelines are rather

mechanical in nature and serve to aid local planners in the methodology of solid waste planning, especially planning for sanitary landfills.

c. Thus, the EPA's solid waste planning grants affect land-use by encouraging states and local agencies to discontinue the improper use of the land that is associated with open dumps. Although this transition of open dumps to landfills eliminates an improper land-use, it may not represent the most advantageous process for the protection and enhancement of the land and other resources. By encouraging state and local solid waste planners, through planning grant guidelines, to develop comprehensive solid waste plans that incorporate recycling, composting, incineration, and sanitary landfills (with priority in that order), the EPA could be helping to ensure that fewer virgin materials will be consumed by the public³⁹ and that less land will be consumed for solid waste disposal. This proposition is a long-range, prevention-oriented solution to solid waste and land-use problems, but the Resource Recovery Act of 1970 contains the incentive for the essential elements of such a proposal. In encouraging state and local planners to implement sanitary landfills, the EPA may be detracting from long-range solutions to land-use and solid waste problems.⁴⁰

Recommendations

The EPA should:

1. Deemphasize the sanitary landfill as the main method of solid waste disposal and begin to encourage states and local governments to develop comprehensive solid waste management plans which incorporate several solid

³⁹If more solid waste was reused and recycled, less virgin materials like trees, tin, and aluminum would be used and the land that produces those virgin materials would also be protected.

⁴⁰EPA's push for land fills may result in slowing the development of recycling, composting, and incineration.

waste disposal methods including (in order of priority) a) recycling, b) composting, c) incineration, and d) sanitary landfills.

2. The Solid Waste Programs Branch should develop solid waste management planning guidelines to assist states and local governments in developing the type of solid waste management plan described in 1. above.

3. As provided in the Solid Waste Disposal Act, the EPA should begin to address, in the form of technical assistance to the states, local governments, and individuals, the solid waste problems associated with agricultural wastes, mine tailings, and sedimentation in general.

3. Solid Waste Disposal on Federal Installations

a. Executive Orders 11507 and 11514 require all federal agencies to protect the environmental quality of federal land. Pursuant to these orders, federal agencies are required to implement the necessary environmental quality control activities, which includes the proper disposal of solid wastes, on federal land. The EPA cannot require other agencies to comply with these requirements, but it does provide some technical assistance for solid waste disposal to those agencies that request such assistance.

Recommendation

The Solid Waste Branch of the EPA should expand its technical assistance to other federal agencies with special regard to mine tailings (oil shale development) and slash on Forest Service leases.

CHAPTER IX. PESTICIDE PROGRAMS

1. General

a. Pesticide use has many varied effects on the land. Obviously, in turn these effects impact land-use. The effects pesticides have on the land are described well by the following comments and observations:

The advent of chemical pesticides has resulted in the conversion of millions of acres from brush and weedy plants into grazing lands more productive for domestic livestock. In making these conversions, the wildlife potential may be seriously impaired, i.e., sage grouse habitat may be eliminated and forbs and browse necessary for antelope removed by chemical pesticides.

The use of pesticides have frequently resulted in large changes in crop rotations with a resulting increase in runoff. The change from a corn, small grain, pasture rotation to a straight corn production increases the amount of pesticides and fertilizers used. This type of cropping reduces the aggregation of soils by reducing the organic matter; therefore, causing a greater amount of erosion.

Pesticides, like many of the plant nutrients, are physically attached to soil particles. Thus, both wind and water erosion can and does move

these pollutants into areas where they may cause environmental damage.

Herbicides used in noxious weed control can effectively remove protective soil cover allowing accelerated soil erosion. Some of the herbicides used are relatively persistent and one (picloram) is also highly water soluble and may move far from the place of application.⁴¹

2. Pesticide Pollution Control Programs

a. The Federal Insecticide, Fungicide, and Rodenticide Act provides that all pesticides shipped in interstate commerce be registered by the EPA according to regulations formulated to implement the intent of the Act. In registering pesticides, the EPA has some control over the manner in which pesticides are to be used. Through better control of pesticide use, the EPA could limit the misuse of pesticides and help to eliminate a certain amount of land pollution, especially in agricultural areas. Agricultural pesticides can be, and often are, misused, especially when pesticide use is not strictly defined and controlled. Such misuse results in land pollution and a decrease in the land's productivity or use for agriculture; misuse also results in pesticide runoff into lakes and streams, causing water pollution which decreases the recreational or industrial

⁴¹Ivan W. Dodson, Jr., Region VIII EPA, Biologist, comments on draft final land-use report.

potential of the entire surrounding area.

3. Federal Environmental Pesticide Control Act of 1972

a. The FEPC Act increases the EPA's authority to control the use of pesticides. The EPA will be responsible for the registration of all pesticides and the control of all pesticide use. Pesticides that are manufactured and sold within a state's boundaries are no longer immune from the EPA's registration requirements. Furthermore, the EPA can now enforce pesticide usage regulations; for example, if a land owner is using a greater concentration of a pesticide on his land than is allowed under the EPA's registration of that pesticide, the EPA may file a civil or criminal suit against the land owner for violating the regulations concerning the use of the pesticide.

b. However, the EPA will need a substantially increased Office of Pesticide Programs to properly monitor pesticide use and enforce the regulations. It is doubtful that the EPA's pesticide programs will be funded to such a degree that the EPA could effectively discharge and conduct the provisions of the FEPCA; subsequently, the protection of agricultural land from pesticide misuse will not be realized to the extent that is possible under the 1972 FEPCA.

Recommendation

The EPA should provide the regional Pesticide Programs Branch with the resources that will be necessary to thoroughly enforce

the new Federal Environmental Pesticide Control Act of 1972; special emphasis should be placed on providing the staff required to monitor the use of pesticides by individuals.

CHAPTER X. NOISE PROGRAMS

1. General

a. The Region VIII EPA's Noise Program, although in its infancy, includes a noise strategy for the elimination of noise pollution. This strategy relies on the cooperation of state and local officials and the interest of the general public to help abate noise pollution. The emphasis of this noise strategy is on 1) encouraging states to establish Noise Pollution Control Offices; 2) influencing communities within the Region to appoint environmental officers who would be responsible for monitoring and taking steps to eliminate all forms of pollution, but especially noise pollution; and 3) making recommendations to state legislatures for comprehensive noise legislation. So far, four states in Region VIII have noise offices and several communities have appointed environmental officers.

2. Land-Use Impact of Noise Program

a. Although the Region VIII Noise Program strategy is product oriented (noise standards)¹, there are some subtle land-use ramifications of the overall program. One element of the strategy involves influencing state and local governments to adopt noise standards which would regulate noise

¹1972 Noise Act notwithstanding.

levels for specific geographical zones and establish noise limits for highways, industrial parks, etc. Such standards, if not properly planned or enforced, could result in the development of improper land-use patterns. For example, if a city established noise standards that would force new highways, industrial parks, etc., away from urban or suburban areas, the result would be an expansion or spreading out of such development away from populated areas and, in turn, new urbanization would leap-frog the inherently noisy development for yet undeveloped areas.

Recommendation

The EPA Regional Noise Program should encourage state and local governments to adopt noise legislation which could abate noise pollution without relying upon or fomenting consumptive land patterns (i.e., tree belts along highways vs. land buffer zones).

ADDENDUM. POPULATION PROJECTIONS

There are no discrepancies between population projections used to determine waste treatment facilities' capacities and those used in Air Quality Implementation Plans, because there is absolutely no correlation between the two. Most air quality projections are based on a multi-county Air Quality Control Region, while waste treatment projections are done for "service areas," which may encompass only a municipality or part of a county.

Four of the states in Region VIII - Colorado, Montana, North Dakota and South Dakota - did not derive their own figures for population projections in their Air Quality Implementation Plans. Instead, they got their figures from the Region VIII EPA Headquarters, which in turn got those figures from the U. S. Department of Commerce. Consequently, for four Region VIII states, the air quality population projections are not based on firsthand knowledge of state and local trends, or of regional trends, but on a figure derived on a purely statistical basis in Washington, D. C.

Two of the states in Region VIII did, however, derive their own figures. Wyoming and Utah based their projections on trends of a more local nature. Wyoming's figures are based on projected mineral development. Since mining is by far the leading industry in the state, this seems a reasonable indicator of population increases. Utah obtained their population

projections from the Salt Lake City Transportation Study, derived by those familiar with local trends. The Region VIII EPA staff has encouraged states to come up with their own population projections for Air Quality Implementation Plans, but four out of the six states took the Department of Commerce figures instead.

Population projections for waste water treatment facilities are normally done by the consulting engineer for each project. The projections are done for "service areas," which may include a municipality, a drainage basin, part of a county, or any number of combinations. Since there are often many service areas in one county, comparing these projections to the county and regional figures in the Air Quality Implementation Plans is somewhat like adding apples and oranges.

There is a general feeling in the Region VIII EPA Headquarters that population projections are of little value in evaluating projected needs. Depending on the mathematical formulae and raw data used, there can be 100% or sometimes 200% difference in the outcome. It is hard to say one projection is "right" and another "wrong," because they are all derived by valid statistical methods.

For example, three different projections were made for the year 2000 for Adams County, Colorado. The Colorado State Planning Office gave one figure, the Denver Regional Council of Governments gave another, and a strictly mathematical formula

called the Linear Regression Shift gave still another:¹

Projected Population of Adams County in 2000

Colorado State Planning Office	375,000
Denver Regional Council of Governments	418,000
Linear Regression Shift	267,476

It is also possible mathmatically to come up with a projection figure far beyond a reasonable land-carrying capacity. These figures must be tempered with good judgment by people who know the area well.

Because population projections are so easily adjusted to suit special interests, and because they are so hard to prove right or wrong, they must be taken with a grain of salt. Those in EPA who must evaluate waste treatment and air quality plans should strive to know the area as well as possible, and avoid heavy reliance on population projections.

¹Working Draft of Comprehensive Long-Range Plan for Wastewater Treatment in the Metropolitan Denver Area, 1972 - 2000. March 1972. Metropolitan Denver Sewage Disposal District No. 1.

APPENDIX I
EPA-HUD INTERAGENCY AGREEMENTS



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D. C. 20410

ASSISTANT SECRETARY FOR
COMMUNITY PLANNING AND MANAGEMENT

MSB 23 1971

Mr. William D. Ruckelshaus
Administrator
Environmental Protection Agency
Washington, D. C. 20460

Dear Mr. *Bill* Ruckelshaus:

It gives me a great deal of pleasure to return to you the Joint Agreement for Inter-Agency Coordination in Planning and Development as approved by the Environmental Protection Agency and this Department. In addition to its consistency with the Presidential objective of simplification and streamlining, the Agreement is in accordance with the objectives of this Department to promote comprehensive planning at the metropolitan and regional levels. Furthermore, important environmental concerns of EPA and HUD, such as water resources, are properly placed by the Agreement within the context of the comprehensive planning process.

Apparently, the spirit of cooperation and diligence was prevalent throughout development of the Agreement since these noteworthy qualities were also observed in the efforts of your staff and are similarly appreciated.

I am in agreement with your suggestion concerning simultaneous announcement and forwarding of the Agreement provisions to the EPA and HUD field offices. I am instructing my staff to proceed with the development of the announcement in coordination with appropriate EPA staff.

The Department intends to work closely with your Agency in the joint implementation of this Agreement. If I can be of any further assistance in this effort, please do not hesitate to contact me.

Sincerely,

Samuel C. Jackson
Samuel C. Jackson

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Enclosure

ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D. C. 20460

JUN 7 1971

OFFICE OF THE
ADMINISTRATOR

Mr. Samuel C. Jackson
Assistant Secretary for Community
Planning and Management
Department of Housing and Urban Development
451 7th Street, S.W.
Washington, D. C. 20410

Dear Mr. Jackson:

This letter transmits for your concurrence a Joint Agreement for Inter-Agency Coordination in Planning and Development that should stimulate through our combined efforts more responsive and effective functional planning to achieve national objectives for water quality. Our respective staffs have developed this Agreement as a joint effort. If it meets with your approval, I would suggest that the provisions it contains be announced simultaneously and forwarded to our respective Field Offices. This Agreement represents an initial step in implementing unified planning requirements and coordinated administration, consistent with the President's objective to streamline and simplify Federal assistance programs.

The cooperative and diligent efforts of your staff in assisting in the development of this Agreement are most appreciated.

I look forward to continued cooperation and mutual support of our common objectives to clean up and keep clean our water resources.

Sincerely,



William D. Ruckelshaus
Administrator

Enclosure

**JOINT AGREEMENT FOR INTER-AGENCY COORDINATION
IN PLANNING AND DEVELOPMENT**

BETWEEN

**THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AND
THE ENVIRONMENTAL PROTECTION AGENCY**

This HUD-EPA inter-agency Agreement has been developed in recognition of the need for uniform planning requirements to determine eligibility of State and local governments and agencies for Federal grants to assist the construction of wastewater collection and disposal facilities and systems, and for the coordination of Federal assistance for such planning and related regulatory programs.

I. SCOPE OF THE AGREEMENT

This Agreement provides for coordinated administration of comprehensive and functional planning and construction grant requirements applicable to:

- (a) Policy and coordinative planning;
- (b) Integrated functional planning for water quality; and
- (c) Development of fully integrated wastewater collection and treatment systems. The grants awarded by HUD and EPA for these programs - listed under Article II of this Agreement - shall have the same administrative and regulatory requirements with respect to comprehensive and functional planning, and programming of wastewater collection and treatment systems. This Agreement incorporates the interagency planning policies and procedures set forth in the Appendix of this Agreement.

II. PROGRAMS INVOLVED

The following programs of both Agencies are covered by this Agreement:

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

- 1. Basic Water and Sewer Facilities Grant Program Section 702 of the Housing and Urban Development Act of 1965, as amended - 42 USC 3102(c).

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2. Comprehensive Planning Assistance (701) Grant Program-Section 701 of the Housing Act of 1954, as amended, - 40 USC 461

ENVIRONMENTAL PROTECTION AGENCY

1. Construction Grants for Wastewater Treatment Works - Section 8 of the Water Pollution Control Act, as amended - 33 USC 1158.
2. State and Interstate Program Grants - Section 7 of the Water Pollution Control Act, as amended - 33 USC 1157.
3. Comprehensive River Basin Planning Grants - Section 3(c) of the Water Pollution Control Act, as amended - 33 USC 1153(c).

A full description of the programs listed is presented in the Appendix, Article III, Paragraph G.

III. FORMULATION OF AREAWIDE PLANNING STANDARDS

A. Coordinative Planning Standards.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

HUD will be responsible for formulating coordinative planning standards. The standards for coordinative planning will include but not be limited to guidelines and minimum requirements with respect to both (a) the legal status, composition, staffing, financial support and other characteristics of the areawide planning organization; and (b) the research and analysis, policy formulation, coordination, and evaluation activities of coordinative planning as defined in the Appendix, Article IV Paragraph D.

B. Functional Planning Standards for Water Quality Management.

ENVIRONMENTAL PROTECTION AGENCY

EPA will be responsible for formulating the standards for wastewater collection and disposal systems planning. Such standards will include but not be limited to guidelines and minimum requirements with respect to: (a) the research and analysis, policy, recommended priorities (subject to review and comment for consistency with State planning strategy, priorities and plan formulation), programming and scheduling, and monitoring and evaluation activities of wastewater collection and disposal functional planning as defined in the Appendix, Article IV Paragraph E; (b) the organizational arrangements of the Areawide Planning Organization (APO) for carrying out wastewater collection and disposal functional planning within the Areawide Planning Jurisdiction (APJ); and (c) the water quality

planning required in accordance with construction grants regulations (15 CFR 601). Such planning is to provide information on the river basin and metropolitan area(s) point and non-point sources of water pollution, and utilizes a systems approach integrating facility construction, management, financial and legislative components. A valid predictive model is also desirable.

IV. LIMITATIONS CONCERNING APPLICATION OF STANDARDS FORMULATED

The standard developed by either Agency under Section A and B of Article III above will be subject to the concurrence of the other Agency and will conform to any limitations and specifications imposed by statute or published regulations of the program covered. Each party to this Agreement will retain responsibility for making determinations regarding consistency of proposed projects with areawide planning. Nothing in this Agreement will be construed to limit the discretion of either signatory Agency to delegate or further delegate, as authorized, the functions and responsibilities covered by this Agreement to their own regional, area or field offices, or to State and local agencies, to the full extent of their legal authority.

V. PLANNING ASSISTANCE

The signatory Agencies agree to provide planning grant assistance to areawide planning programs on a joint basis wherever possible, and to give priority in their planning assistance grant programs to areawide planning programs jointly funded by the signatory Agencies. Policies and procedures to implement this funding for areawide planning are set forth in the Appendix, Article III.

VI. EFFECTIVE DATE AND SUPERSEDITION

To the extent provisions of the Agreement and the Appendix of this Agreement are inconsistent with provisions of prior agreements between the signatory Agencies, such provisions of prior agreement are hereby superseded.

Signed at Washington, D. C., This 7th day of June, 1971

Community Planning and Management
Metropolitan Development, HUD

Environmental Protection Agency

BY [Signature]
Assistant Secretary

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BY [Signature]
Administrator

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**JOINT REGIONAL AGREEMENT FOR INTER-AGENCY
COORDINATION IN PLANNING AND DEVELOPMENT
Between
THE ENVIRONMENTAL PROTECTION AGENCY
and
THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGION VIII - DENVER, COLORADO**

In accordance with the "JOINT AGREEMENT FOR INTER-AGENCY COORDINATION IN PLANNING AND DEVELOPMENT BETWEEN THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT AND THE ENVIRONMENTAL PROTECTION AGENCY" dated 6-7-71, the Region VIII offices of HUD and EPA mutually agree to the following:

1. Modification of EPA-HUD National Agreement

- A. Prior to July 1, 1973, HUD certification requirements and EPA Water Quality Management planning requirements may be waived by mutual consent of both EPA and HUD for non-metropolitan areas on a case-by-case basis. Such waivers may be granted only after consideration of the following criteria.
- (1) Need for abatement of a public health hazard.
 - (2) Need for compliance with State-Federal Water Quality Standards and with EPA enforcement conditions such as 180-day notice and enforcement conference recommendations and Water Quality Standards Implementation schedules.
 - (3) Requirements of State and local cease and desist orders.
 - (4) Assurances that the subject non-metropolitan area will meet both HUD and EPA requirements by July 1, 1973.
 - (5) Compatibility between collection and treatment system is assured.

2. Interagency Processing Procedures

- A. EPA and HUD will notify their respective constituents of the National and regional joint agreement for interagency coordination in planning and development.
- B. EPA and HUD field offices will provide each other, on a monthly basis, a list of all grant applications, including locations and the name and geographical coverage of the Areawide Planning Jurisdictions in which they are located.

C. Interagency working arrangements will be established between HUD and EPA offices to accomplish the following:

- (1) HUD will notify EPA of those APO's and APJ's that meet HUD certification requirements. Copies of HUD certification forms 4110.1, 4110.2 and 4110.3 will be sent to the EPA office by the HUD office.
- (2) EPA will notify the appropriate HUD office of those areas where interim basin and areawide water quality plans are sufficient to evaluate a HUD sewer grant.
- (3) Applications for the 10 percent bonus feature of EPA construction grants will no longer be referred to HUD, as projects in cleared metropolitan areas will automatically be eligible.
- (4) EPA field offices will notify the HUD office of all 180-day enforcement notices upon issuance.

3. Planning Areas and Organizations

- A. EPA and HUD are to recognize the same Areawide Planning Jurisdictions (APJ). Wherever possible, State designated planning districts or OMB designated clearinghouse jurisdictions should be recognized as the APJ's. There may be situations that require planning on a smaller scale and the designation of smaller APJ's within a State planning district or clearinghouse area. This may be the case where HUD-required planning arrangements for an entire State planning district or clearinghouse area are not yet fully developed or where initial planning priority should be focused on urban areas within largely non-metropolitan planning districts. In these cases, water quality management planning may be performed for the urban and urbanizing areas redefined and/or designated as APJ's within the larger planning areas.
- B. A specific Areawide Planning Organization (APO) shall be responsible for the planning within each APJ and will be so designated and certified by the responsible HUD Area Office. An APO can have jurisdiction over more than one APJ. In those instances where no APO is in existence or cannot be established for an APJ within a three-month period and an EPA grant is critically needed, the requisite HUD planning may be carried out by or under the direction of the appropriate State agency as designated by the responsible HUD Area Office. In such cases, planning and policy decisions will be made by the State in conjunction with local elected officials and the area will be placed on notice that no

further HUD sewer or EPA municipal treatment facilities construction grants assistance will be available unless an acceptable APO is established within one year.

- C. Areawide Water Quality Management Planning should be performed by the APO. In those instances where the APO does not have the capability or is unable to undertake such planning at this time, the State may assume this responsibility with the concurrence of the APO, if in existence.
- D. Special Cases.

The above descriptions define requirements where each agency's programs are on schedule. Where adherence to the above would materially hinder the other's program, modifications of these requirements will be developed in conjunction with the State water quality and comprehensive planning organizations. Such modifications will be included as addendum to this agreement.

4. Acceptance and Certification of Plans

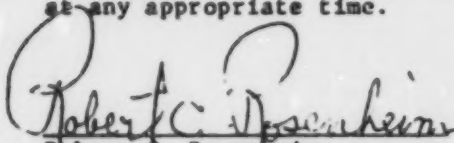
- A. EPA will accept plans that have been certified by the State after a review shows that 18CFR601.32-.33 (July 2, 1970) requirements have been met.
- B. HUD certifies metropolitan/regional water quality plans, after EPA has found them acceptable, as meeting the functional planning and programming criteria for water and sewer facilities as set forth in HUD's Circular Series MPD 6415 (July 31, 1970).
- C. Notification to the States of plan acceptance by both EPA and HUD will be the responsibility of EPA. Since timing is critical during the interim period, verbal signoffs can be obtained (recorded by memorandum in plan file).
- D. In order to assure flexibility as called for in the HUD certification procedures, preliminary plans and programs for initial HUD certification are acceptable as a minimum. Such flexibility may be especially appropriate in non-metropolitan areas where planning organizations have recently been established. The preliminary approach may take the form of a land use sketch plan, preliminary goals and objectives, population and economic projections, and a preliminary water/sewer plan and program provided a work program is submitted indicating that such planning will be updated and refined for recertification purposes. The development of such preliminary planning and programming should not involve more than a two to three month effort.

5. Development of Joint Programs

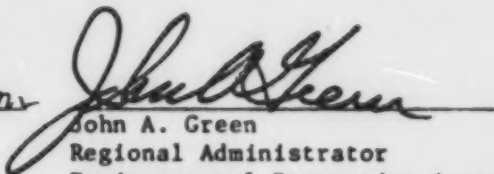
- A. EPA-HUD offices will meet as appropriate to develop and coordinate joint regional strategies which influence the funding of projects and which have significant environmental considerations.
- B. EPA-HUD offices will meet as appropriate to develop a procedure to coordinate respective planning assistance programs for water quality and comprehensive planning.

6. Modifications of this Agreement

In keeping with flexibility inherent in the EPA-HUD agreement, this agreement between the Region VIII offices may be modified at any appropriate time.



Robert C. Rosenheim
Regional Administrator
Department of Housing
and Urban Development
Region VIII



John A. Green
Regional Administrator
Environmental Protection Agency
Region VIII

APPENDIX II
GUIDELINES FOR PREPARATION OF ENVIRONMENTAL ASSESSMENTS

CHAPTER 1. ELEMENTS OF ENVIRONMENTAL ASSESSMENT

The overall goal of environmental assessment, as defined by the National Environmental Policy Act, is to insure that Federal actions

"...encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation. . ."

This chapter discusses the basic intent of the assessment process, the scope of the process, and how the results of an assessment can be useful to State, regional, and local planners.

Intent

The environmental assessment is intended to insure that water-quality-management planning and related activities contribute to the net well-being of man while minimizing or eliminating adverse impacts.

Until quite recently, quality of life was interpreted as a function of standard of living as measured by various economic indicators. It is now evident that quality of life cannot be assured through increased economic growth alone. To enhance the net well-being of man, environmental and related social factors must be analyzed before economic development activities proceed.

As stated previously, NEPA requires that environmental impact statements be prepared on major Federal actions that will have a significant effect on the environment. It is hoped that this additional dimension of environmental planning will lead to more prudent use of resources and, consequently, to a higher quality of life. Each impact statement must address the five areas of concern outlined below; indicated details that must be covered have been excerpted from EPA's "Procedures for Preparation of Environmental Impact Statements" published in the *Federal Register* (40CFR Part 6). Such impact statements will frequently be prepared on water quality management plans accepted by EPA. Environmental assessments prepared as part of these plans should address the same concerns required in an impact statement and must identify

✓ (1) Direct Environmental Impacts of the Proposed Action

- All primary and secondary effects, both beneficial and adverse, should be described.
- The scope of the description should include both short- and long-term impacts.
- The analysis should include specifics of the area; the resources involved; physical changes; alterations to ecological systems; and changes induced by the proposed action and population distribution, population concentration, and the human use of land (including commercial and residential developments), and other aspects of the resource base such as water and public services.
- The time frames in which these impacts are anticipated should be included.
- Mention should also be made of remedial, protective, and corrective measures which will be taken as part of the proposed action should it be implemented.

✓ (2) Adverse Impacts that Could Not be Avoided Should the Proposal be Implemented

- A description should be provided of the kinds and magnitude of adverse impacts which cannot be reduced in severity or which can be reduced to an acceptable level but not eliminated.
- For those impacts which cannot be reduced, their implications and the reasons why the action is being proposed notwithstanding their effect should be described in detail.
- Where abatement measures can reduce adverse impacts to acceptable levels, the basis for considering these levels adequate and the effectiveness and costs of the abatement measures should be specified.
- In particular, the analysis should detail the aesthetically or culturally valuable surroundings, human health, standards of living, and other environmental goals set forth in Section 101(b) of the National Environmental Policy Act.

✓ (3) Alternatives to the Proposed Action

- Alternatives to any proposed action which involves significant trade-offs among uses of available environmental resources should be developed, described, and objectively weighed.
- Analyses should be structured in a manner which allows comparisons of environmental cost differences among equally effective alternatives, and differences in effectiveness among equally costly alternatives.
- Where practicable, impacts should be quantified or else described qualitatively in a way which will facilitate an objective judgment of their value.
- The alternative of taking no action should also be evaluated.

✓ (4) Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

- Cumulative and long-term effects of the proposed action which either significantly reduce or enhance the state of the environment for future generations should be described.
- Particularly, the desirability of actions should be weighed to guard against shortsighted foreclosure of future options or needs.
- Special attention should be given to effects which narrow the range of beneficial uses of the environment or pose long-term risks to health or safety.
- Who is paying "the environmental costs" versus who is gaining the "benefits" over time should be identified.

- The reasons the proposed action is believed to be justified now, rather than reserving the long-term option for other alternatives, including no use, should be explained.

✓ (5) Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action Should it be Implemented

- The extent to which the proposed action curtails the diversity and range of beneficial uses of the environment should be described.
- Uses of renewable and nonrenewable resources during the initial and continued phases of the action shall be outlined. In this regard, construction and facility uses may be irreversible because a large commitment of resources makes removal or nonuse thereafter unlikely; such primary impacts and particularly, secondary impacts (e.g., opening areas to further development) generally commit future generations to similar uses.
- Irreversible damage which may result from environmental accidents associated with the action should be considered.
- Any irretrievable and significant commitments of resources should be evaluated to assure that such current consumption is justified.

In addition, the environmental assessment should include a discussion of any measures that have been taken to permit public involvement in the formulation or selection of the proposed plan, in the identification of any environmentally-based controversies resulting from the plan, and in their resolution. It should be noted that the above-mentioned EPA "Procedures for Preparation of Environmental Impact Statements" require that public hearings be held on draft impact statements where the originating official determines that the action will have a significant impact on the environment and that a public hearing would facilitate the resolution of conflict or significant public controversy. Public hearings are also expected to be a routine part of the planning process.

The advantages of taking the above factors into consideration during the planning process is that plans can be formulated from the very beginning to minimize adverse environmental effects and maximize beneficial ones. In addition, plans can be changed most conveniently and economically during the initial planning stages.

In the past, public planning has traditionally operated in an accommodation mode, where environmental and related social structures were provided to accommodate economic forces. That is, planning was based around the desires of the population irrespective of adverse ecological and environmental consequences. The spirit of NEPA, however, suggests that environmental planning can be used to lead the way to a better quality of life. The premise is that by taking cognizance of environmental factors in the conceptualization of plan and project alternatives, one can usually find a way to achieve most objectives while eliminating major adverse impacts or perhaps even saving money.

In summary, environmental assessments are intended to motivate planners to focus their efforts on improving quality of life. This can be achieved by identifying and considering

- Direct environmental impacts of the proposed action
- Adverse impacts that could not be avoided should the proposed action be implemented
- Alternatives to the proposed action
- Relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity
- Irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Scope

The following discussion outlines the broad spectrum of factors related to overall quality of life likely to be influenced adversely or beneficially by water quality management plans. These are the factors which, therefore, must be addressed in environmental assessments. It is especially important to consider indirect impacts outside the water sector.

Consider a hypothetical river basin which has farming as the principal activity, but includes several small towns and a large metropolitan area. Also in the basin are sizeable land areas used for recreation, open space, and stone and gravel operations. The metropolitan area has grown 20 percent in the last 10 years and this trend is expected to continue in the near future. Several large industries are located in the city, and there are immediate plans for developing a new industrial park. Some of the existing industries are served by the present municipal waste treatment system, while others discharge their untreated effluents into the river. Stormwater runoff is treated in the metropolitan area, but not in any of the small towns.

For illustrative purposes, assume that a basin plan for the entire river basin including the metropolitan area is to be developed. Under the discussion of alternatives, the plan would include

- (1) Treatment of wastes from
 - agricultural activities
 - mining operations
 - municipalities
 - industries
 - stormwater runoff
- (2) Sludge disposal from all wastes
- (3) Transfer of wastes (treated and untreated) and sludges via water, pipeline, and truck
- (4) Industrial reuse of treated sewage effluent.

Some of the environmental considerations of this plan might concern

(1) Growth expected along new interceptor and sewer lines

- Is the growth compatible with existing land uses?
- Is the growth socially acceptable in that area?
- Does the growth overburden services in that area? (water supply, waste treatment, school, police, etc.)

(2) Waste treatment

- Does it improve the environmental quality of the basin?
- Is the dissolved oxygen in the river improved significantly?
- Is there an improvement in the aquatic ecosystems in the basin?
- Does the reused water create potential hygienic problems?

(3) Site location for treatment plants

- Is the site compatible with adjacent land uses?
- Does the plant location disrupt the aesthetic composition of the area?
- Are any individuals relocated?
- Is the terrestrial ecology disturbed?

(4) Sludge and solid waste disposal

- Does incineration of sludge create air pollution problems?
- Do the spoils from the mining activities affect the aesthetic composition of the area?
- Is the soil suitable for sludge disposal?

These questions and many more should be asked concerning the environmental aspects of an areawide water quality management plan. As is evident from these illustrative questions, environmental considerations are diverse, complex, and often interrelated. Therefore, if the environmental assessments are to be meaningful and to follow the guidelines of NEPA, the framework for conducting these assessments must be comprehensive, systematic, and interdisciplinary.

- **Comprehensive**, because the environment is an intricate system of living and non-living elements held together by complex processes, and because environmental concerns relating to large-scale projects range widely from physical impacts on natural resources – air, land, water – to the impacts on living organisms – plants, animals, microorganisms – to a variety of impacts on people, including aesthetic, cultural, and social concerns.

- **Systematic**, because to be effective as a decision-making planning tool, environmental impact assessments must be replicable by different analysts and must be able to withstand scrutiny by various interest groups.
- **Interdisciplinary**, because environmental concerns that are related to resources, living organisms, and people obviously require a broad range of talents and disciplines for analysis -- including the physical, biological, and social sciences.

One systematic approach is to break environmental concerns into major categories, major subcategories, and ultimately into specific measurable parameters. Such an approach permits the analyst or decision maker to consider as little or as much detail as appropriate to his need at any stage of the planning. Planners should examine all parameters in detail during the early stages of planning, although ultimate decision makers and the lay public may confine their concerns to only broad impact areas or major categories.

One approach to defining the environment is to employ four major categories:

- ✓ ● **Physical/chemical factors** are the classical context in which the environment is usually viewed. These factors cover the impacts on the physical and chemical aspects of the air, land, and water sectors of the environment. Further, changes in the chemical and physical quality of the environment precipitate impacts in the three remaining categories: ecological, aesthetic, and social.
- ✓ ● **Ecological factors** cover impacts on life forms of the natural environment. Both plant and animal life are included. These factors address the question of species density and distribution, the broader question of species interaction in communities and finally, the interaction communities and habitats in an ecosystem.
- ✓ ● **Aesthetic factors** relate to the visual and other sensory effects of construction and land use that may result as part of a water-quality improvement plan. These include both indirect visual impacts on natural settings (air, land, and water) and direct visual impacts of man-made structures.
- ✓ ● **Social factors** include those that affect overall human well-being, human health, and the quality of life.

Further breakdown of these major categories into specific measurable parameters is discussed in Chapter 2.

Results

The following discussion is designed to illustrate how the results of an environmental assessment can assist planners in maximizing the net beneficial impact of their activities.

The ultimate purpose of an environmental assessment is to provide a basis for judging the overall merit of a proposed plan and its alternatives for water quality improvement. As such, the environmental assessment must identify, develop, and analyze in detail the pertinent issues and the pros and cons of alternative courses of action. Consequently, the key to meaningful environmental assessment is the identification of typical alternatives at the planning stage, as opposed to the piecemeal modification of plan components after problems become apparent.

This approach is based on the premise that any given water quality improvement objective can be achieved by a number of different paths. Further, each path will have not only different dollar costs at the planning, construction, and maintenance stages but also different environmental impacts. To select the best overall plan, decision makers need to know the net environmental impact of each alternative package or plan. The sequence of steps in the planning process ranging from the definition of problems to the analysis of environmental impact is shown in Figure 1.

At this point, reconsider the previously discussed example of the river basin and the proposed areawide plan. Options that need to be considered include alternate routes for sewers, collectors, and interceptors; alternate site locations for a treatment facility; alternate treatment processes; and alternate sludge disposal techniques. Exploring the sewer routing a bit further, one route may require construction through a wooded area with possible ecological impacts whereas another may follow well-established roads, which when torn up may cause hardship and inconvenience on adjoining residences or businesses — a form of social impact. Another route may avoid both types of problems but may require substantial pumping; in addition to being expensive, this alternative would place a burden on energy resources and upon those sectors of the environment affected by energy generation facilities through thermal pollution or various forms of air pollution. Identification of these kinds of possibilities at the early planning stages leads rapidly to identification of alternate ways of performing nearly every subfunction that must be provided for in a complete plan to meet a specific set of objectives.

The result of an environmental impact analysis should be an identification and an evaluation of impacts for each alternative considered. Both beneficial and adverse impacts must be analyzed. Environmental assessment is basically a two-step process. The first step is an *identification* of the nature of the impacts — beneficial or adverse; usually some form of checklist is useful in insuring that important factors are not overlooked. The second step is an *evaluation* of impacts. Impacts must be evaluated with respect to two important attributes — their magnitude and importance; both are essential if trade-offs are ultimately to be made.

As has been mentioned, it is not the intent of the Environmental Policy Act that alternative water quality management plans be screened on the basis of their environmental and related social impacts alone. Economic development is another important factor. Finally, there are dollar cost considerations; traditionally this has been the major decision criterion by which projects were selected. The best alternative was one interpreted as that requiring the least investment to meet a rather narrowly defined objective.

Now, however, to be responsive to contemporary needs, broader objectives relating to quality of life need to be included. Consequently, consideration must be given to environmental and related social effects that cannot be articulated in dollar terms. Explicit consideration of nonmonetary values greatly complicates the decision-making process; however, this is not a valid excuse for not analyzing and identifying these concerns as well as possible. Ultimately, the final selection will be a trade-off of man's short- and long-term uses of the environment. Environmental assessments help to insure that the best overall decision is made.

The key elements of environmental assessment may be summarized as follows:

- Environmental assessments identify beneficial and adverse impacts, alternative actions, short-term vs. long-term trade-offs, and irreversible commitments of resources in any proposed action.

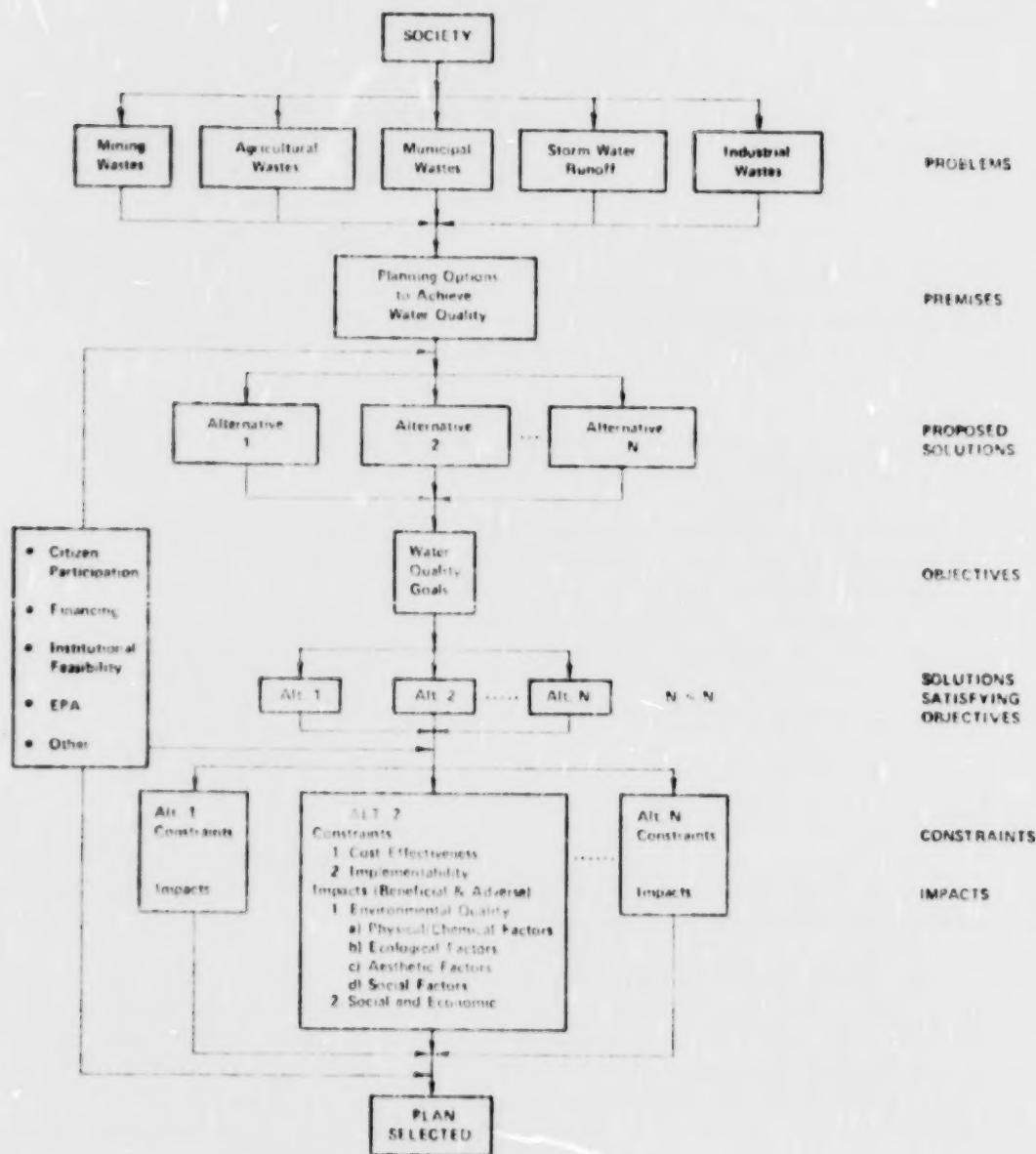


FIGURE 1. RELATIONSHIP OF ENVIRONMENTAL ASSESSMENT TO WATER-QUALITY MANAGEMENT PLANNING

- Environmental assessments should be conducted in a comprehensive, systematic, and interdisciplinary framework which emphasizes the indirect and direct impacts of water quality management plans.
- Four major categories can be used to describe environmental impacts: physical/chemical, ecological, aesthetic, and social.
- Environmental assessment, involving (1) identification and (2) evaluation of the importance and magnitude of impacts, can be used to determine the net effect of a given alternative on quality of life.

**INTERIM GUIDANCE FOR PREPARATION
AND REVIEW OF
ENVIRONMENTAL ASSESSMENTS FOR
WATER QUALITY MANAGEMENT PLANS**

The purpose of this document is to provide guidance where needed for incorporating environmental considerations during the development of water quality management plans required by 18CFR601.32-33 and for assessing the environmental impacts of alternative water quality management strategies.

The assessment of the environmental impacts of water quality management planning strategies is a basic element of the planning effort. The EPA Water Quality Management Planning Guidelines require that all environmental factors be considered when evaluating alternative water quality management strategies to select the most feasible plan for a basin, metropolitan or regional area.

EPA regulations and guidelines require that environmental assessments be prepared and submitted with each water quality management plan. The assessments should include a description of the area, and a discussion of the environmental impacts of plan implementation on such items as: (1) the ecology of the area, (2) the natural resources of the area, (3) the population and social amenities of the region, (4) the aesthetics of the region. The assessment should also include a discussion of all feasible alternatives as well as the public response to the proposal.

If the plan is properly formulated and documented, and the above items fully considered throughout the planning process (and therefore all environmental factors incorporated into the substance of the plan), the planning report should contain all the components of an environmental assessment. The environmental assessment should occur early enough in the planning process so that it can be of use in mitigating environmental impacts of the plan itself rather than on a project by project basis.

It should be noted that some plans may still have the potential to create a significant impact upon the environment, thereby necessitating the preparation of an environmental impact statement as required by the National Environmental Policy Act (Public Law 91-190). This Act requires that environmental impact statements be prepared for all Federal actions that would significantly affect the quality of the human environment. The objective of this Act is to build into the Agency's decision-making processes an appropriate and careful consideration of all environmental aspects of proposed actions. The statement would describe the ways in which the proposed action would affect the environment. It would also include a discussion of the anticipated effects of the various alternatives.

The following format is suggested as a guide for the analysis of alternatives in a water quality management plan. As stated before, if all environmental factors are fully considered and documented in the development of a plan, a summary assessment, cross-referenced to the plan report, will be adequate.

I. Background

Include a description of the planning area, population and growth trends, water quality problems, resource objectives or constraints and present wastewater facilities and management programs.

II. Summary of Alternative Solutions

Delineate principal features of each alternative plan and summarize size, all capital and operating costs over this planning period, and completion dates of the main components of each plan.

III. Detailed Environmental Evaluation of Each Feasible Alternative Plan

- A. Probable impact on environment (complete display and analysis of beneficial and adverse effects).
- B. Adverse effects which cannot be avoided.
- C. Relationship between short-term beneficial uses versus long-term environmental consequences.
- D. Any irreversible and irretrievable commitments of resources.

IV. Comparison of Alternatives and Selection of Proposed Plan

Summarize comparison of alternatives in terms of environmental effects. Highlight ecological factors and include pertinent social and economic effects.

V. Opportunity and Extent of Public Participation

Discuss the results of meetings and/or public hearings with elected officials, interested groups, and individuals. Any objections to the project should be discussed.

The above format reflects the need for the examination and systematic comparison of alternative solutions in arriving at the proposed plan as required by the National Environmental Policy Act. Because of the subjective nature of such a comparative analysis, the views of the affected public should be encouraged and fully considered in the selection of a plan. Maximum public involvement throughout the plan formulation period is fundamental to the eventual success of many plans.

The attached list of environmental evaluation factors provides guidance to the preparers and reviewers of environmental assessments for water quality management plans. Other environmental issues associated with the plan may exist and should also be covered in the assessment.

The EPA Regional Office responsible for acting upon the plan presented is required to independently appraise the environmental effects of the plan in conjunction with the normal plan review. This appraisal will be based primarily upon the information contained in the assessment together with any other pertinent available information submitted or obtained. Based on this appraisal and in accordance with the National Environmental Policy Act, the EPA Regional Office shall prepare and process a formal environmental impact statement on those plans which are considered to have a significant impact upon the environment or which are highly controversial due to environmental issues. The impact statement shall be written as an agency document, utilizing much of the information contained in the applicant's assessment. In some cases, the applicant may be asked to provide or obtain additional information or studies needed to resolve issues addressed in the impact statement.

ENVIRONMENTAL EVALUATION FACTORS FOR WATER QUALITY MANAGEMENT PLANS

NATURAL RESOURCES

A. WATER

1. Does the plan present a reliable solution for meeting water quality standards or goals throughout the planning area?
2. Does the plan recognize all reasonable point and non-point sources, hydrologic conditions, and conditions particular to the area such as ice cover?
3. Discuss the beneficial and adverse effects of plan implementation on aquatic biota and habitats. Also discuss the effects on municipal and industrial water supply, irrigation, and recreation uses within the planning area.
4. Discuss the physical effects of plan implementation on both high and low-flow conditions of the streams.
5. If there is a local groundwater depletion problem, has groundwater recharge of treated wastewater been considered, and its effects evaluated?
6. If local water demand is high and supply low, has water reuse been considered? What effects would these water reuse measures have on meeting both water quality and quantity needs?
7. If spray irrigation is proposed or considered, its effects on the hydrologic patterns of the basin and on both surface and ground water quality should be discussed.
8. If interbasin transfer of wastewater effluent is considered, what environmental effects would such transfer have on the waters of each basin?

B. AIR

1. Discuss what considerations have been given to evaluating the ambient air capacity within the planning area to receive the total emissions resulting from implementation of the plan?
2. Discuss relationship of treatment plant sites, nearby residences and businesses, and prevailing wind patterns.

C. LAND

1. Discuss consistency of the water quality management plan with the HUD sponsored comprehensive plans or planning in process for the area. If there is no HUD comprehensive plan, discuss consistency with locally developed land-use plan.
2. Is current land zoning consistent with the comprehensive or land-use plans available or being formulated? Has citizen participation been encouraged or permitted in these local planning and zoning efforts?
3. Would implementation of the water quality management plan induce urban development consistent with the development trends or plans of the area? Would it strive for a balance between population and the capacity of the renewable resources. (A planning premise should be that every area has an ultimate level of environmental carrying capacity that when exceeded leads to the degradation of the area. For this reason, a balance should be achieved between resource use and availability)
4. Discuss types and amounts of land that would be irreversibly used by facilities included in the plan. For spray irrigation strategies, would the irrigated lands have greater social values for other uses?
5. Have alternative facility sites been considered and were environmental factors recognized in site selections?
6. Have adequate facility sites been reserved and protected for plan implementation? Do the sites permit enough land to develop a buffer area to screen the projects?
7. Have alternative sites for disposal of solids from wastewater treatment plants been considered? What environmental factors were considered in selecting the disposal sites?

HUMAN EFFECTS

A. SOCIAL AND ECONOMIC

1. Will plan implementation require relocation of people, disrupt employment opportunities, or impair public services?
2. If considerable urban growth would occur as a result of plan implementation, what consideration was given to developing the necessary sewerage services as well as other services and public utilities to serve such growth in a timely manner.
3. Discuss how the plan will affect recreational opportunities, either beneficially or adversely.

4. Would the plan affect historical, archeological, or cultural values? What measures have been taken to protect these values?

B. AESTHETICS

1. Have facility sites been selected to minimize visual impacts upon the landscape?
2. If facility sites are located in areas of natural scenic beauty, what measures will be taken to protect these areas?
3. Will architectural and landscaping techniques be included in the individual facilities?

PUBLIC PARTICIPATION

According to EPA policies and procedures, public participation is an essential part of the formulation of water quality management plans and component wastewater treatment projects. The purpose is to provide an opportunity for the public to make an input into the formulation and selection of the proposed action so that the action will be consistent with public desires where possible.

A satisfactory environmental assessment must therefore:

- a. Clearly indicate the measures, if any, have been taken to permit public involvement in the formulation or selection of the proposed plan.
- b. Identify any environmentally based controversies resulting from the plan and steps taken to resolve these controversies.

In addition, the assessment should include a discussion of measures being taken to incorporate the public's views, both favorable and unfavorable, into the formulation of the plan. The assessment should identify any controversial issues that have not been resolved.

TECHNICAL GUIDANCE FOR
PREPARATION AND REVIEW OF
ENVIRONMENTAL ASSESSMENTS FOR MUNICIPAL
WASTEWATER TREATMENT PROJECTS

The purpose of this document is to provide guidance for incorporating environmental considerations into the design and construction of wastewater treatment facilities. Both the EPA Water Quality Management Planning Guidelines and the Design, Operation and Maintenance Guidelines require that all aspects of the environment be considered in the formulation of water quality management plans and component municipal wastewater treatment projects.

EPA regulations and guidelines also require that environmental assessments be prepared by the applicant and submitted with each grant application. The assessments should include a discussion of the environmental impacts of the proposed project on such items as: (1) the ecology of the area; (2) the natural resources of the area; (3) the population and social amenities of the region; and (4) the aesthetics of the region. The assessment should also include a discussion of all feasible alternative solutions as well as the public response to the proposal.

The purpose of an environmental assessment is to evaluate and document the effects of a proposed project on all aspects of the environment. To develop an environmentally sound and acceptable project, environmental factors must be fully considered throughout the project formulation period. The assessment should be a complete, concise, and accurate presentation of these environmental considerations. Even then, some projects may still have the

potential to create a significant effect upon the environment, thereby necessitating the preparation of a formal environmental impact statement as required by the National Environmental Policy Act (Public Law 91-190). The Act requires that an environmental impact statement be prepared for all major Federal actions significantly affecting the quality of the human environment. The objective of this Act is to build into the Agency's decision-making processes an appropriate and careful consideration of all environmental aspects of proposed actions. To serve that purpose, the statement should describe the ways in which the proposed action, as compared with other feasible alternatives, would affect the environment.

As stated previously, environmental assessments will be prepared by applicants and submitted with each project application. If the application is supported by a detailed engineering report containing a broad environmental evaluation of the project, a summary assessment cross-referenced to the engineering report will be acceptable. If the engineering report is not sufficiently detailed, an independent environmental assessment document will be required.

The following format is suggested as a general guide for preparing an assessment on a major project. A more abbreviated format may be appropriate for a smaller project or an enlargement of an existing project.

I. Brief Background

Include a description of the project service area, pertinent basin and areawide water quality management plans, physical resources constraints for the project, and present and future wastewater treatment needs.

1234

II. Summary of Alternative Project Solutions

Delinicate alternative solutions and the principal features of each alternative, including size, all capital and operating costs over the project life,* and completion dates of each feature.

III. Detailed Environmental Evaluation of Each Feasible Alternative

- A. Probable impact on environment (complete listing of beneficial and adverse effects.)
- B. Adverse effects which cannot be avoided.
- C. Relationship between short-term beneficial uses versus long-term environmental consequences.
- D. Any irreversible and irretrievable commitments of resources.

IV. Comparison of Alternatives and Selection of Proposed Project

Summarize comparison of alternative solutions, in terms of environmental effects. Highlight ecological factors and include pertinent social and economic effects.

V. Opportunity and Extent of Public Participation

Discuss the results of meetings and/or public hearings with elected officials, interested groups, and individuals. Any objections to the project should be discussed.

The above format reflects the need for the examination and systematic comparison of alternative solutions in arriving at the proposed project, as required by the National Environmental Policy Act. Because of the subjective nature of such a comparative analysis, the views of the affected public should be encouraged and fully considered in the selection of a project. Maximum practicable public involvement throughout the formulation period is fundamental.

to the eventual success of all plans and/or projects.

The attached list of environmental evaluation factors provides guidance to the preparers and reviewers of environmental assessments for individual projects. The assessment should address all of those factors contained in the list that are pertinent to the project. Other environmental issues associated with the project may exist and should also be covered in the assessment.

The EPA Regional Office responsible for acting upon the grant application is required to independently appraise the environmental effects of each project in conjunction with the normal project review prior to making a grant offer. This appraisal will be based primarily upon the information contained in the assessment together with any other pertinent available information. Based on this appraisal and in accordance with the National Environmental Policy Act, the EPA Regional Office shall prepare and process a formal environmental impact statement on those projects considered to have a significant impact upon the environment or those which are highly controversial due to environmental issues. The impact statement shall be written as an agency document, utilizing much of the information contained in the applicant's assessment. In some cases, the applicant may be asked to provide or obtain additional information needed to resolve issues addressed in the impact statement.

ENVIRONMENTAL EVALUATION FACTORS
FOR MUNICIPAL WASTEWATER TREATMENT PROJECTS

NATURAL RESOURCES

A. Water

1. Does the project conform with the basin or areawide plan for meeting water quality standards or objectives?
2. Discuss the beneficial and adverse effects of the project on aquatic biota and habitats. Also on local municipal and industrial water supplies, irrigation, recreation and other uses.
3. If there is a local groundwater depletion problem, has groundwater recharge been considered and its effects been evaluated? Would such a project contain adequate treatment to protect the quality of the groundwater?
4. If local water resource demand is high and supply low, has water reuse been considered? What effects would such reuse measures have on meeting water quality needs in the receiving water?
5. If spray irrigation is proposed, what effect would such a project have on groundwater or surface water quality? Would such irrigation deplete stream flows during low-flow periods?
6. Discuss whether the project will contribute to increased incidents of flooding by either reduced hydraulic capacity of the floodway or increased downstream flows.

B. Air

1. If incineration of sludge is proposed, what effect will the emissions have on the air quality of the area? Will this comply with local air quality standards?

2. Discuss the relationship between nearby residences and businesses, the project, and prevailing wind patterns?
3. If odor problems can be expected from the project, what precautions will be taken to minimize this effect?

C. Land

1. Discuss how the proposed project will encourage or discourage residential, commercial, and industrial growth within the service area. Will interceptor locations and system capacity induce growth in undeveloped areas or concentrate population in developed areas?
2. Would project effects on growth conform with land-use plans for the area? Would such growth appear consistent with the growth trends of the area and the community.
3. How will the project affect the land-based ecosystems near the facility sites, such as wildlife habitat, stream bank cover, and vegetal and wooded growth on rights-of-way.
4. Would the project impair the landscape and/or create irreparable damage to geologic formations?
5. Discuss the type and amount of land that will be affected permanently by construction and operation of the project.
6. Have alternative sites for project structures with lesser adverse impact upon the environment been fully considered?
7. Has consideration been given to restricting future development adjacent to the treatment plant site through land acquisition or land-use control?
8. Discuss methods for ultimate disposal of solids from the wastewater treatment plant. What environmental factors were considered in selecting the disposal sites, or otherwise arriving at the selected solution.

HUMAN EFFECTS

A. Social and Economic

1. Will project result in the relocation of people? Discuss social and economic effects of such disruption.
2. Discuss how the project will affect recreational opportunities in the area due to improvement in water quality, location of facilities in or adjacent to parkland, etc.
3. Will the project alleviate public health or nuisance problems?
4. Will the project affect historical, archaeological, or cultural values? What measures will be taken to protect these values?
5. If the project will induce growth upon the service area, discuss the effects of such growth on the community. Will other public services and utilities be available to serve such growth when it occurs?
6. Will the project result in the propagation of insects? Discuss any preventive measures to control this problem.
7. Discuss any noise problems due to operation of the facilities in terms of time of occurrence, duration, intensity, impact, and possible control.

B. Aesthetics

1. Are project sites located in wooded areas, parks, or other areas of recognized aesthetic value? If so, what measures would be taken to minimize project effects on these areas?
2. Describe architectural and landscaping techniques to blend the structures with the surrounding area.

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5. If the project will induce growth upon the service area, discuss the effects of such growth on the community. Will other public services and utilities be available to serve such growth when it occurs?
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7. Discuss any noise problems due to operation of the facilities in terms of time of occurrence, duration, intensity, impact, and possible control.

B. Aesthetics

1. Are project sites located in wooded areas, parks, or other areas of recognized aesthetic value? If so, what measures would be taken to minimize project effects on these areas?
2. Describe architectural and landscaping techniques to blend the structures with the surrounding area.

CONSTRUCTION

1. Will clearing of vegetation and wooded cover be restricted at project sites?
2. Will clearing involve the use of herbicides, blasting, or burning? Discuss these measures and their environmental effects.
3. Define erosion control measures to be taken during construction. Will these procedures preclude sedimentation and turbidity in the nearby waters?
4. Discuss proximity of the construction sites to residences or businesses and the possible nuisances that will result during construction.
5. Discuss the possible adverse effects of the construction on aquatic life and wildlife in the area.

PUBLIC PARTICIPATION

According to EPA policies and procedures, public participation is an essential part of the formulation of water quality management plans and component wastewater treatment projects. The purpose is to provide an opportunity for public input into the formulation and selection of the proposed action so that the action will be consistent with public desires, wherever possible.

A satisfactory environmental assessment must therefore:

- a. clearly indicate the measures have been taken to permit public involvement in the formulation or selection of the proposed project.
- b. identify any environmental controversies resulting from the project, as proposed, and efforts to resolve these controversies.

In addition, the assessment should include a discussion of what measures are being taken to incorporate the public's views, both favorable and unfavorable, into the formulation of the project. The assessment should identify any controversial issues that have not been resolved.

APPENDIX III
BIG SIOUX CASE STUDY

CASE STUDY

EPA ENVIRONMENTAL IMPACT STATEMENT REVIEW AND ITS IMPACT ON THE BIG SIOUX RIVER BASIN RESERVOIR PROJECTS

The Army Corps of Engineers published a preliminary draft environmental statement on the Big Sioux River and Tributaries in March, 1972. It involves the building of two reservoirs, one on the Big Sioux River and one on Skunk Creek, a tributary. Before the reservoirs can be built, a final draft and a final impact statement must be written. In the preliminary draft statement, a number of questionable aspects of the project have become evident. The Region VIII Environmental Protection Agency has made extensive comments on the report.

The project includes two multiple-purpose dam and reservoir projects in the Big Sioux River Basin near Flandreau and Hartford, South Dakota. The Flandreau dam would be built on the Big Sioux River itself, near the mouth of Flandreau Creek. The dam near Hartford would be built on Skunk Creek. A table of statistics follows:

	<u>Flandreau</u>	<u>Skunk Creek</u>	<u>Total</u>
(acres)			
Total Project Lands	27,730	12,795	40,525
Reservoir Surface Area	21,500	7,700	29,200
Exclusive Recreation Lands	430	195	625

According to the Corps of Engineers report, the projects would provide flood control, water supply, low-flow augmentation, recreation, and fish and wildlife enhancement benefits for the Big Sioux Basin. The EPA comments on the

environmental statement point out potential problems in all these areas, and more. There are several direct land-use implications which will be emphasized in this case study.

Probably the most direct change in land-use would be the loss of 33,281 acres of productive agricultural land. An additional 7,244 acres would be acquired which have not been classified as cropland by the USDA. These 7,244 acres include bottomland associated with the Big Sioux River, Skunk Creek, and their tributary streams. This land is now used as native pasture, native hay ground, or it lays idle.

A total of 40,525 acres are involved. Out of this, if the reservoirs were built, 29,200 acres would be subject to inundation. This includes 17,600 acres of reserved pool, and 11,600 acres of mudflats and intermittently flooded land between the reserved pool level and maximum flood control pool. Another 625 acres would be devoted exclusively to recreational development, and the remaining 10,700 acres would be used for wildlife management and "other project purposes". The Corps did not specify what these other project purposes involved.

Another major aspect of the project is encouragement of flood plain development. There is an immediate danger that the City of Sioux Falls will expand into the Skunk Creek flood plain. The city has no flood plain regulations in effect at the present. Part of the rationale behind the Skunk Creek dam was flood protection for these developing areas. EPA has several comments on this. First and foremost, agencies of the Federal government, through their actions and policies, should take the lead in discouraging flood plain development. It was recommended that Sioux Falls

be encouraged to initiate flood plain regulations as soon as possible. It was also pointed out that the proposed projects would not provide complete flood protection. The figures given in the Corps report indicate only a reduction in annual flood damage, about 29.8 percent below the Flandreau site and 86 percent along Skunk Creek. It would seem that encouragement of development in an inherently undesirable area is even worse if flood protection is incomplete.

According to the Corps report, the Flandreau and Skunk Creek projects would provide a total of 52.1 million gallons of water per day to Sioux Falls. This might be viewed as an encouragement to development in the area, except that water supply is not a limiting factor in the Sioux Falls area. The Corps statement indicates that Sioux Falls could economically expand its well field by 10 million gallons per day, and that using current projections, the water supply would be adequate until 1995. Aside from that, there would be several problems associated with drawing municipal water from the reservoirs. Both rivers show high nutrient levels. Under warm-water reservoir conditions, nuisance algae blooms would be inevitable. These excessive plant growths would interfere with water-based recreation and future withdrawals for water-supply purposes. Excessive algae clogs pumps and filters. Certain algal species impart foul tastes and odors to the water, and certain blue-green algae emit toxic substances. Algal blooms make treatment of water for potable uses extremely expensive, as stated in the Corps report itself.

The projects' low-flow augmentation benefits are particularly significant in the light of existing water pollution problems in the basin.

Pollution of the basin's streams originates primarily from municipal-industrial wastes and from feedlot-barnyard runoff. On a yearly basis, waste water flows from Sioux Falls currently exceed natural river flows about 20 percent of the time. Water quality below Sioux Falls is not suitable for domestic water supply or immersion sports. This puts limitations on the land-use possibilities downstream.

Although the Sioux Falls sewage treatment plant is designed to remove 95 percent of the BOD, the discharge of its treated waste still exerts an oxygen demand on the Big Sioux River equal to that of untreated waste from 25,000 persons. This is due to the large amount of industrial waste treated by the city's plant. This becomes critical in December, January, and February, when waste flows exceed natural river flows 42 percent of the time. Low-flow augmentation from the two reservoirs would provide some dilution in these months. However, this seems a poor substitute for improved waste treatment facilities.

The proposed reservoirs would be located in rural areas, but would each be within five miles of Interstate highways 90 and 29, respectively. Extensive service-oriented development (gas stations, motels) can be expected at the Hartford interchange on I-90 and on three interchanges near the Flandreau Reservoir on I-29. Both areas have an extensive road system of gravel and surfaced roads which follow the section lines of nearly every section. The South Dakota Department of Highways has no plans for construction of additional highways in the area. They are not involved, however, in county and local road building. At that level, road widening and improvement could be expected.

Recreational development around the reservoirs would have a lasting effect on land use. The Corps of Engineers estimated that approximately 2,700 fishermen days and 2,390 hunter days per year would be lost on lands and waters inundated by the two reservoirs. River canoeing and sandbar camping along the Big Sioux River would be eliminated along a 27 mile stretch of impoundment. Aesthetic values associated with the meandering channel and riparian vegetation of the free-flowing stream would be lost.

The reservoirs were to have provided swimming, fishing, boating, waterfowl habitat, and related activities. Several problems became apparent in the environmental impact statement, however. The Corps has no doubt that the reservoirs would act as nutrient traps and would be subject to algae blooms and eutrophication. Recreational use of the reservoirs themselves would be rather short-lived, considering the seriousness of the algae problem. In addition, EPA questioned the aesthetic and recreational value of large expanses of mudflat for over 100 days a year.

Both reservoirs are near Sioux Falls, a city of 72,488, and will be subject to recreational homesite development. The Corps of Engineers will purchase only the land which is absolutely necessary for the projects. According to Mr. Goodell of the State Planning Agency's Model Rural Development Program, land speculation in the area has not begun yet, but can be expected if the dams are approved. Several citizens' groups in the area are pushing for lakeside zoning ordinances. Many are present owners of lakeside property.

The Sioux Falls area has an abundance of natural lakes. Only two nearby lakes have extensive recreational development. If these existing lakes are not being developed, we must conclude that the recreational needs of the area are not seriously lacking. The natural lakes are becoming eutrophied due

to agricultural runoff. If allowed to continue, these lakes will be lost as recreational assets; but no more so than the eutrophied reservoirs built by the Corps of Engineers.

Waterfowl habitat was presented as a mitigating factor for the existence of some 5,000 acres of mudflats. The EPA review asked the Corps of Engineers to discuss the rationale for determining the attraction of waterfowl to the area. The alternate exposing and covering of the mudflat would seem to inhibit development of waterfowl food and habitat.

The Big Sioux River supports a permanent fishery upstream from Sioux Falls. Downstream, high summer temperatures and low dissolved oxygen (caused by inadequate sewage treatment) precludes maintenance of a permanent game fish population. Skunk Creek does not support a fishery. The permanent pools of the reservoirs would supply 17,600 acres of potential new fishing waters for the basin. With intensive management, fisheries could be maintained there. Periodic supplemental stocking would be required to maintain the fish population according to the Corps Impact Statement.

In retrospect, it appears that the projects would destroy existing recreational, fish, and wildlife values in favor of short-term attempts to improve them. Due to eutrophication and sedimentation, these "improvements" would not be of a lasting nature.

Other aspects of the project which the EPA asked to be more fully considered include the relocation of 146 families, the low cost-benefit ratio (less than 1.00), and the physical splitting of a school district with loss of revenue to that district because of project lands passing out of private ownership.

The Corps report stated in one place that rural land use and cropping patterns are not expected to change. Later in the same report it was stated that agriculture will intensify in future years. Given this paradox, we can only draw our own conclusions as to the effect of the dams on agricultural land-use. The Bureau of Reclamation has indicated that 147,000 acres of land in the basin are suitable for irrigation. State permits have been issued for irrigation on about 23,600 acres. However, rainfall in recent years has frequently been sufficient to sustain crops without additional water, so that very little of the 23,600 acres is actually being irrigated. High capital and labor costs probably contribute to this lack of interest. There is adequate ground water for irrigation. Given these parameters, any increase in irrigation water from the reservoirs would be of minor significance in encouraging agriculture. Furthermore, the partial flood plain protection provided by the dams would likely encourage residential and commercial development on existing flood plain farmlands.

In summary, the Big Sioux Basin projects would bring about both immediate and long-range land-use changes. About 33,281 acres of productive agricultural land and 7,244 acres of bottomland would be changed to 29,200 acres of maximum flood control pool, 625 acres of recreation area, and 10,700 acres of wildlife habitat and other project uses. The dams would encourage flood plain development, especially along Skunk Creek. The projects could influence development of agriculture and industry through increased water supplies. This impact would probably be minor, however, because water is not a limiting factor in the area, and because of high treatment costs associated

with eutrophication in the reservoirs. Low flow augmentation in the winter months would improve water quality downstream from Sioux Falls during those months. Improvement of this water would encourage use of the river for domestic water supply and contact activities, which are not now possible. Low flow augmentation should not, however, be used as a substitute for adequate sewage treatment facilities at Sioux Falls. The project would commit much more land to recreation than is now committed, although the utility of these recreational areas in the future will slowly decrease due to eutrophication and extensive mudflats. In the long-run, the projects would cause a net loss of recreational opportunity.

EPA's comments on the preliminary draft environmental statement went out on July 21, 1972. The Corps of Engineers has not yet written a final draft statement, though there has been sufficient time. It is entirely possible that adverse public opinion, EPA's comments, and comments of other agencies have killed the Big Sioux project. The Model Rural Development Program of the State Planning Agency had some excellent comments on the project which are included at the end of this case study.

Comments by the First Planning and Development Committee,
Model Rural Development Program,
On the Preliminary Draft Environmental Statement
For the Big Sioux River and Tributaries
(Flandreau and Skunk Creek Reservoirs)

The First Planning and Development District, Model Rural Development, was created primarily to assist in areawide development and planning for rural areas. The district was created as a joint effort between the Federal Regional Council in Denver and the South Dakota State Planning Agency. We operate in Sub-State District Number 1.

A major problem in rural areas is that of declining population, which is directly related to decreasing economic activity. Our policy board, the District Planning and Development Committee, is therefore quite apprehensive about any project which threatens to shift people from our rural areas to the central city, thereby threatening to further decrease economic activity and business opportunity within the First District area. We foresee the loss of 40,000 acres of taxable, fertile agricultural land, the potential loss of a school district, a major decrease in taxes to run county governments and other undesirable effects. It is even more disconcerting when we see that a majority of the benefits will accrue to the urban area of Sioux Falls, and an area just slightly larger than that covered by the water forming the dams. The major concern is a philosophy which favors city development over rural development.

The District must oppose the project until we can see more concrete Economic and Social benefits for our people.

FLOOD CONTROL

Although the severity of flooding would be reduced by the proposed

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project, the annual losses to floods would increase substantially due to flood plain development. According to figures contained in your Environmental Impact Statement, the losses in the year 2030 would increase by \$520,509 annually over the current losses. Those living along the river should be made aware that the proposed structures will not stop all floods and that you have predicted increased annual losses after the dam is completed.

In addition, it should be brought out that natural siltation reduces the usefulness of the dam for all proposed purposes including flood control. Forty or fifty years into the future, with concurrent development on the flood plain downstream, we have the potential for a disastrous flood such as the one that ravaged Rapid City, taking out the Canyon Lake Dam.

In downstream agricultural areas, the now small buffer zone of natural vegetation between the river and field or feed lot is lost as "Farming to the Bank" is promoted. This becomes very expensive in terms of erosion and nutrient-biological pollution. Even in absence of flood waters, heavy rains will wash a greater load of soil, nutrients, and biological pollutants into the river with the reduction of the natural buffer.

Future Consideration

An obvious but very important question is: What happens in 50 to 75 years when the structure loses its flood control capacity. It seems that this question should be addressed somewhere in the final environmental impact statement so those in the flood plain are aware of the alternatives available in the future. It is important that the wisest decision be made now on how to spend limited resources.

Alternative Approaches

Most conservationists prefer water storage to channelization as a structural means of reducing flood damages. Small tributary storage and

flood plain management is preferred over major reservoir storage. And a combination of watershed development and flood plain management seems greatly superior since this approach reduces the severity of flooding and erosion, which have contributed greatly to the eutrophication of our natural prairie lakes and streams. The destruction of our natural lakes and streams represents a tremendous economic, social, and environmental loss to this area.

Although land treatment practices and flood plain zoning haven't been as spectacular or as popular as high water dams, they are now gaining wider acceptance. As more money becomes available for watershed development, and flood plain management is accepted, flood control will diminish as a purpose for man-made reservoirs.

WATER SUPPLY/WATER QUALITY

Sioux Falls will definitely be in need of an expanded water supply. Here again, it should be noted that the proposed structures would only be a temporary solution with diminishing capacity over time to the rapidly increasing consumption of water. In time, the siltation will render the structures useless for water supply; hence, Sioux Falls with a greatly expanded need for water will have to find some alternative source.

Important questions have been raised about the quality of water expected in the Flandreau reservoir. Heavy algae blooms characteristic of eutrophic lakes would provide special design problems for the withdrawal system and the water would need extensive treatment. The operation of this system might, in fact, be too expensive to be feasible.

It is certain that the water quality of Sioux River below Sioux Falls needs to be upgraded. Low flow augmentation is a questionable solution since it merely dilutes the high BOD water coming from Sioux Falls' waste

treatment plant. A better alternative would be for Sioux Falls and other municipalities to discharge wastes with an acceptable BOD level. This is, of course, difficult for Sioux Falls with the great quantity of waste water discharged.

There are alternative solutions to each of the problems of water supply and water quality control independently. In Sioux Falls, tertiary treatment of the waste water and the eventual recycling of this water into alternative municipal uses could solve, in part, the water supply problem, water quality/volume problem. The pumping of water from existing impoundments might be feasible over the longer term. Surely an expenditure of \$47 million could make a number of alternatives feasible.

Long term benefit cost analysis of a recycling system might provide the most feasible solution to the problem allowing the existing well field to serve indefinitely if most of the water going into the system remained, instead of being lost back to the river.

RECREATION AND FISH AND WILDLIFE ENHANCEMENT

Recreation, fish and wildlife enhancement, seems to be the most questionable purposes of the dam yet are ascribed 50 percent of the benefits attributed to the entire project.

One of the highest priorities of our District Committee is to reclaim our eutrophic natural lakes and protect the others so their recreation potential will be restored or preserved. Our District is spending considerable time seeking federal assistance to abate these problems. It is quite clear that the 98,000 people represented in this district are interested in recreation provided by non-eutrophic lakes.

According to the Dakota Environmental Council's opinion concerning the

Dam, "Intensive management would be necessary to insure a game fish population, and annual stocking would be a probability. This expense presumably would be borne by the State of South Dakota. Recreational use for the majority of the tourist season seems questionable, as major drawdowns would occur in July, August, and September, and extensive mudflats would exist in the bulk of the summer season. Although these mudflats would be desirable for waterfowl hunting in the fall, they would have an adverse effect on picnicing, water sports, camping, and fishing."

It would appear that the initial purchasing, and long term maintenance and management would be quite expensive. Since the taxpayers of the state will be assuming this burden, details of the total project costs, which will be the state's financial responsibility, is necessary in order to make the best decision.

RELOCATION OF FAMILIES

The social and economic pressures placed on those farmers who must relocate have never been given the proper weight when figuring the benefit/cost ratio. Recently, socialologists and pyschologists have been analyzing the affect of relocation on individuals uprooted by highway projects. Although all the results are not confirmed from these studies, a definite correlation exists between major relocation changes and family illnesses the year following such a change. We would suspect that most of these families would experience severe economic and social problems following either the actual relocation or immediately after the project was approved, or both.

In all likelihood, many of the farm families will move to the city where they will have to be retrained for a new job or will retire. This forced change of life style in new surroundings can be a fairly shattering experience

for some. The result could cost the individual and his new community a considerable amount of money if adjustment problems are encountered.

If the project is approved, some economic reimbursement and social adjustment help should be given to these families on the basis of individual family readjustment problems.

ADVERSE ECONOMIC IMPACT IN MOODY AND BROOKINGS COUNTIES

Adverse Affects on Transportation

--Reconstruction of Interstate Highway I-29

Upon reviewing the proposed dam project and the area to be affected, it was calculated that approximately 2.5 miles of I-29 would be in danger of being under water at least once in one hundred years because of its physical relationship to the surcharge elevation (1581.2 feet) and the one hundred year flood design estimate. The elevation of the surface of I-29 in the project area is 1576.2 feet, thus approximately 2.5 miles of I-29 would have the potential of being under at least five feet of water. The cost of reconstruction is estimated as follows. This estimate does not consider the past cost of constructing 2.5 miles of interstate or does it include the hardships and hindrances of rerouting the traffic that I-29 will be generating during the proposed reconstruction schedule.

1. Beach slope and rip-rap	\$250,000/mile	\$ 625,000.0
2. Grading and Surfacing	450,000/mile	1,125,000.0
3. Bridge, 400 feet	500,000/mile	<u>500,000.0</u>
	TOTAL	\$1,750,000.0

--Reconstruction of U. S. Highway 77

The affected area of U. S. Highway 77 is 1.5 miles west of and upstream from the I-29 area. This affected area would cover approximately 2.0 miles. Since the highway has been given over to Brookings County for maintenance, the reconstruction cost burden would be primarily placed on that county. Following are the estimates for reconstruction of U. S. 77.

1. Surfacing and Grading plus rip-rap	\$150,000/mile	\$300,000.0
2. Bridge	150,000	<u>150,000.0</u>
	TOTAL	\$450,000.0

--Reconstruction of State Highway 13

State Highway 13 runs north from Flandreau and approximately one mile of it would be underwater. This project would take a considerable amount of fill because of the proposed reservoir depth at this location.

1. Bridge	\$200,000	\$200,000
2. Surfacing and grading plus rip-rap	200,000	<u>200,000</u>
	TOTAL	\$4 0,000

The combined cost estimates for reconstruction, and we estimate these to be low, would be \$2,600,000. This reconstruction estimate does not include the dead-ending of all abutting county roads; a burden on the affected counties, does not include recent highway and bridge construction; a burden on the state and counties, and does not include the hardship of traversing the project area by the residents of the involved counties.

--Reimbursement Policy

Many county and township highways will be disrupted. Currently, there is no plan to reimburse units of government for the inconvenience and actual cost.

Adverse Affects on Business Opportunities

It is estimated that each acre of land, if kept in agriculture, would produce \$50 of new wealth annually. The new wealth has a multiplier effect and would turn over 5 to 7 times in business transactions, resulting in an approximate loss of \$500,000⁰⁰ over 50 years to the communities near the project site.

Loss of Crop Land

The irreversible loss of prime agricultural land should weigh heavily in any decision due to the world population problems and the concurrent food shortage. Productive land represents a national wealth and should be used in the best way, or preserved for a time when it will be needed. In terms of economics, the loss will of course be felt most in the immediate area surrounding the reservoir sites.

School Districts

The three school districts--Brookings, Egan, and Flandreau--will be adversely affected in three ways by the proposed project: (1) Loss of students, (2) Loss of taxes, and (3) Disruption of school bus routes. Each of these has adverse economic implications for the schools and the community.

As stated earlier, it is probably that many of the families displaced will relocate outside the impact counties. In Moody County, the loss of students and taxes will probably cause the Egan School District to close, resulting in a major reshuffling of the remaining students to other school districts. Egan would also lose the money brought in by teachers and students and the financial burden on the other school districts would increase. In addition, the Flandreau School District would lose 103 students resulting

in class rescheduling problems, poor teacher-student ratio, under utilization of staff, and loss of subjects.

The rerouting of buses due to the physical disruption of existing routes would cost Flandreau an additional \$9,000 annually and Egan (if the school district survived) \$2,300. This represents a major cost, particularly when the loss of existing tax base is also considered.

It is difficult to determine the final effect on the economy, or the quality of education; however, this brief overview indicates that the social and economic impact would be significant. The environmental impact on the school districts should be carefully detailed in the final report.

Loss to Counties

Based on the 1971-72 taxes, Moody and Brookings counties would lose annually \$140,634 in taxes, or \$7,081,700 over the project period (50 years). The tax money is an assured source of revenue to support the activities required of county government. The effect of shifting the burden of local government to a smaller number of tax payers in the form of higher taxes may well hasten the migration to the urban areas, a process the First Planning and Development Committee is trying to reverse.

Summary

Most of the benefits claimed by this project are for those downstream from the reservoirs, and specifically for a single urban area. However, it appears that the claimed downstream benefits may not be as great as they look at first glance and most likely will become distinct liabilities just a few years after completion of the project--Specifically flood control, water supply, water quality control, and low flow augmentation.

The benefits claimed for the reservoir sites (recreation, fish and wildlife enhancement) appear to represent a tremendous cost in terms of both main-

tenance and management. These costs would be borne by the state tax payers, many of whom are more interested in recreation characteristic of non-eutrophic lakes. Waterfowl hunting is the only water, or water related recreation which has major potential.

The adverse economic and social effects on the individual families and communities on, or near, the project sites seems vast compared to the limited benefits of an eutrophic lake with its extensive mudflats and very limited recreational potential. Two of the highest priorities established by our District Committee are: (1) Reclamation of the Eutrophic natural prairie lakes, and (2) Reversal of rural out migration.

The District Committee feels that all of the alternatives should be explored as well as an elaboration of the various impacts presented in these comments. We sincerely appreciate the Corps' invitation to comment on the preliminary Environmental Impact Statement and hope that these comments will be of help to you.

APPENDIX IV
CASTLEWOOD DAM PROJECT

CASE STUDY

THE IMPACT OF EIS REVIEW ON LAND-USE FOR THE CASTLEWOOD DAM PROJECT, COLORADO

The Castlewood Dam project is a good example of how the EPA Environmental Impact Statement review authority can help spot projects of questionable ecological validity, which ultimately have land-use impacts. Since no written guidelines for EIS evaluation now exist, there is no guarantee that land-use impacts are always considered fully by the EPA. Whether considered or not, however, land use is affected by EIS review decisions. Such a case is the Castlewood Dam Project, proposed by the Army Corps of Engineers.

Briefly, the project included three new reservoirs and extensive channelization of Sand Creek, Toll Gate Creek, and Cherry Creek, for the purpose of flood control for the highly urbanized areas downstream. The two reservoirs on Sand and Toll Gate Creeks (Sand Creek basin) would have been managed as dry-pool reservoirs, due to insufficient stream flow to keep them filled. The Castlewood Reservoir (Cherry Creek basin) would have retained some water year-round, and would have been constructed on Cherry Creek about 20 miles upstream from an existing reservoir. The combined capacity of the existing Cherry Creek Reservoir and proposed Castlewood Reservoir would be approximately equal to the volume generated by a storm with a peak discharge 33 times as great as that generated by a 100 year storm.^{1/}

^{1/} Preliminary Draft Environmental Statement, "Sand and Toll Gate Creeks, Colorado." p. 19.

In total, the project would have involved about 10,532 acres; 6,372 acres of Sand Creek basin, and 4,160 acres of Cherry Creek basin, causing extensive land use changes.

The EPA Region VIII office reviewed the preliminary draft environmental statement on the project and offered their comments. EPA had no major objections to the Sand and Toll Gate Reservoirs, as long as proper precautions were followed in construction and maintenance. There were objections to the Castlewood Reservoir however. Unlike the other areas, Castlewood Canyon is a unique ecological niche. With its steep sides and north-south orientation, it supports a wide variety of flora and fauna not to be found anywhere else in the area.

Acting upon EPA's evaluation, evaluations of other agencies, and rather strong public opinion, the Corps of Engineers has submitted a modified plan for the area. The modified plan calls for deletion of all three proposed reservoirs. It calls for addition of a floodway for spillway discharges from the existing Cherry Creek reservoir into Toll Gate Creek. The original channelization plans were left intact, with the addition of a short stretch of Toll Gate to be channelized. (See map for comparison of revised and original plans.)

According to the Corps of Engineers, the modified plan of improvements would eliminate the threat of serious flooding along Sand, Toll Gate, and Cherry Creeks, in areas that are now extensively

developed or are rapidly becoming urbanized.^{2/} This particular modification was not included as an alternative action in the preliminary draft environmental statement, even though it would provide the degree of flood protection described above.

With this background, we can explore the effect that EIS review authority had on land-use in this watershed area, assuming that the revised Corps of Engineers plan is approved and carried out. Once approved within the Corps, another Environmental Impact Statement for the new plan must be submitted to EPA.

Both the original and revised plans provide flood control for the developed and developing areas downstream, so there should be no significant difference in development potential in that area because of flood danger. Urban sprawl is advancing in the lower reaches of the watershed, and may be expected to continue unless basin or land-use plans are formulated and implemented soon. Two major home developments are being built near Cherry Creek in the area between the existing Cherry Creek Reservoir and the defeated Castlewood site. Their water supply (deep well aquifers) and sewage disposal (complete recycling, no discharge into Cherry Creek) are such that they neither affect nor are affected by surface stream flow.

^{2/} "Notice of Issuance of Study Report on Sand and Toll Gate Creeks, Colorado, An Interim Report on the South Platte River and Tributaries, Colorado, Wyoming, and Nebraska." Army Corps of Engineers, Missouri River Division. June 5, 1972. p. 1.

being mostly shortgrass prairie with some grazing and agriculture. The EPA review voiced no objection to developing Sand Creek basin as planned, but the two reservoirs in this basin were dropped in the Corps of Engineers revision. So the net effect of the reviewing procedure was to cause the Sand Creek basin to go undeveloped for recreation and to leave the area open for private development in the future.

The Castlewood Reservoir (Cherry Creek basin) would have been a permanent lake suitable for water-related recreational activities. There is presently, however, an 87-acre state recreation area there which is extensively used. As it is, the canyon provides a rather unique recreational setting, and is the site of some archeological findings. Because of the EPA review, the canyon has been saved from inundation, and the land will remain the same for the time being. At present, Castlewood Canyon is used for recreation, education, archeological digging, and some farming.

Had the dam at Castlewood been built with the accompanying recreation facilities, it would probably have encouraged development in the so-called Black Forest (Ponderosa pine and Douglas-fir) surrounding it. According to an interim report by the Denver Regional Transportation District, this is a very desirable area for development, if done carefully. There are no plans at present to develop the area.

There were no provisions for use of Castlewood Reservoir water to provide irrigation or city water supply. Flood control and recreation were the only planned uses for the water. Therefore, killing the Castlewood project had no effect on land-uses as they relate to availability of water for agricultural, residential, or industrial growth.

Had the Castlewood Reservoir been built, a 1,000 acre floodway for 18 miles downstream of it would have been acquired as a flood plain. The details of the floodway had not been determined at the time the preliminary draft EIS was written. A floodway of natural vegetation would provide better flood protection downstream than a developed area along the creek, if, in fact, home development does occur along the creek. Because of the revision in plans, this floodway has not been provided for, and is open to development.

Included in the original Corps of Engineers proposal was extensive recreational development around the reservoirs. Facilities would have included new roads, camping and picnic areas, and trails around all reservoirs; and various swimming and boating facilities on Castlewood Reservoir.

Since both Sand Creek and Toll Gate Creek Reservoirs (Sand Creek basin) were to be dry-pools, the area subject to intermittent inundation would be virtually useless for recreation or any alternate land uses. In its present condition, the Sand Creek basin is not suited to recreation,

In short then, the EPA Impact Statement review authority played an important part in changing Corps of Engineers plans. These changes had several broad land-use effects. First, proposed recreational facilities were lost. On the other hand, a unique biotic community (Castlewood Canyon) was saved from destruction. Secondly, land ownership was affected. Instead of publicly owned recreation areas, most of the land will remain in private ownership, and will be subject to possible development in terms of residential, commercial, and industrial use, due to close proximity to a large urban area.

Development in Castlewood Canyon would be particularly objectionable. Private developments are out of reach of EIS review authority. The EPA can, and should when an area such as Castlewood Canyon is recognized, attempt to affect development in the area through manipulation of grant money and by informing the applicable planning agencies of special circumstances involved in the area.

An effort is being made at the present to identify and contact those agencies which could have an impact on land-use in Castlewood Canyon. There is not now a comprehensive land-use plan in effect for the area. A letter from EPA to Arapahoe County concerning this is included.

16 JUL 1972

Ref: AWIE

Mr. Russell Higginson, Chairman
Douglas County Commissioners
Douglas County Courthouse
Castle Rock, Colorado

Dear Mr. Higginson:

As you know, the U.S. Army Corps of Engineers has recently revised its planned flood control program for Cherry Creek and has eliminated the proposed Castlewood dam and reservoir project from consideration. This decision was based on a combination of adverse environmental and economic effects that would have been realized had the project been implemented.

Although the decision to abandon the dam and reservoir project was in the best interest of a quality environment, this affords no guarantees that the Castlewood area will be immune to pressures of development and urbanization. As you may know, uncontrolled development may lead to serious environmental degradation, including increased water and air pollution, solid waste disposal problems, and deterioration of the aesthetic and recreational experience. Consequently, it may be appropriate at this time to consider the implementation of strong land-use controls for this unique natural area, as a part of the overall land-use plans for Douglas County.

As an integral part of land-use development for the Canyon area, I would also urge the County to consider the possibility of conducting a broad scale, multidisciplinary study of the ecological, physical, social, and economic factors that have affected the development of the Canyon to date. Such a study may provide the baseline data needed to make land-use decisions that are consistent with the natural character of the Canyon and environs.

We would be pleased to discuss the fate of the Castlewood Canyon area with appropriate County Planning officials.

Sincerely yours,

original signed by
Charles W. Gortz, Jr.
for

John A. Green
Regional Administrator

APPENDIX V
CENTENNIAL VALLEY PROJECT

CASE STUDY

THE IMPACT OF AN EPA CONSTRUCTION GRANT ON LAND-USE IN THE LEAD-DEADWOOD AREA, SOUTH DAKOTA

The Lead-Deadwood Sanitation District Project is an example of how EPA grants for construction of local water pollution control facilities can have an impact on land-use patterns. The Environmental Impact Statement for this pollution control project was written by EPA, Region VIII, and reviewed by other governmental agencies and private interests.

The project involves construction of a tailings-stabilization pond to serve as a waste treatment facility for the towns of Lead and Deadwood, South Dakota, and the Homestake Mining Company nearby. The waste treatment pond will cover 288 acres of land on Centennial Prairie. The pond has a life-expectancy of 20 years, with room for expansion beyond that time. An 8 mile interceptor pipeline will be built, starting at Lead and running downhill to Centennial Prairie, picking up effluent along the way. The wastes to be treated are of two different types. The first is the storm runoff, infiltration, and sanitary sewage from Lead and Deadwood. The other type, and the greatest in importance, is the mining wastes (tailings) from the Homestake gold mine. Both cities and the mining company are now dumping their raw wastes into Whitewood Creek. Depending on natural runoff, these wastes now compose anywhere from 50-100% of the stream flow.

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An Environmental Impact Statement was prepared by EPA largely because of controversy surrounding possible contamination of ground water by the treatment pond. The Centennial Prairie site is characterized by geologic fracture and exposed aquifers, as is much of the Black Hills. The EPA felt, however, that the treatment pond could be sealed well enough to prevent leakage into the ground water supply. The nature of the mining effluent is such that it would be particularly harmful in the ground water. Homestake Mining Company discharges cyanide (180 pounds/day), arsenic, iron, lead, zinc, and selenium. Although 80% of the sand fraction of mining waste is returned to the mine shafts, the remaining 20% sand fraction and the total slime fraction now being dumped into Whitewood Creek amount to 2,735 tons per day.

The tailings-stabilization pond will, over its 20 year lifetime, prevent these mining wastes and municipal wastes from polluting the Whitewood Creek, Belle Fourche River, Cheyenne River, and the Cheyenne arm of Oahe Reservoir. It should ultimately convert the sediment-laden, biologically sterile Whitewood Creek into a clear running, productive stream.

The immediate land-use impact of the project involves a conversion of 288 acres of pasture and hay-producing land into a settling pool. The settling pool will be aesthetically displeasing, thus discouraging housing development or recreational use of the immediate area. The interceptor pipeline will be laid partly underground and partly above

ground. All along 6 miles of pipeline, access roads will be needed for construction and maintenance. Construction of three miles of this road will necessitate removal of forest cover. These roads will increase accessibility in some remote areas, which may serve to intensify land usage.

At the present the economy of this area is based largely on the mining operation. Although the Black Hills are a major recreation area for the region, the Lead-Deadwood area has not been involved to a great degree, partly because of the pollution problem on Whitewood Creek. The site of the original Homestake Mine is a part of the Deadwood-Lead National Historic Landmark District (National Park Service) and is of historical significance. With the elimination of the open sewer in Whitewood Creek, the area has more potential as a multiple-use recreation area. Also, if mining operations eventually cease, this could be an asset in changing from an industry-oriented to a recreation-oriented economy.

With a facility for waste treatment already available, new industry may be encouraged. It may also encourage Homestake Company to expand their operations or to make changes in disposal procedures. There was some question as to whether Homestake might return to the mercury extraction method once the pond is constructed. This method was discontinued in December, 1970. The capacity of the treatment pond is not such that another large polluter could be accommodated without shortening the life-expectancy of the pond drastically. But a sanitary district is

now formed, and additional treatment facilities will be more easily added. There is an abundant ground water supply and room for industrialization. The economy of the area, now largely dependent on the mining operation, would benefit from a more diverse income base. Because of EPA pollution control construction grants, more industry can be accommodated without rendering the area useless for other purposes.

The Bureau of Reclamation sited a possible benefit of the treatment pond, in terms of more useable irrigation water downstream. Presently, Whitewood Creek carries too much fine-grained sediment and heavy metals to be useful for irrigation water. The Bureau has no plans for a restudy of the area, but predicted that waste treatment on Whitewood Creek would be of value to residents in the lower reaches of the Belle Fourche Project in the vicinity of Vale, South Dakota. By making more useable irrigation water available, more land can be put into agricultural production.

The Environmental Impact Study stated that ground water down the valley would be affected one way or another. Centennial Prairie now serves as a feeding area for the Minnekahta limestone aquifer. If it is (as EPA contends) possible to completely seal the pond from seepage into the aquifer, ground water supplies will be somewhat reduced. If seepage should occur, there is a possibility of contaminating numerous wells which are used by ranchers in the area

for domestic and livestock purposes, and also several municipal water supplies. Loss of this economical water supply could cause extensive socio-economic disruption and accompanying land-use changes.

The Lead-Deadwood project set a potentially dangerous precedent for the use of eminent domain for land acquisition. In the preliminary engineering report by Brady Engineering Company, the projected figures for discharge in the year 1990 are as follows:

	<u>Population</u>	<u>Suspended Solids (tons/day)</u>
Lead	7,100	0.7
Deadwood	4,980	0.3
Homestake Mining Co.	-----	3,065

The residents of Lead and Deadwood, with sewage treatment requirements less than those of Homestake Mining Company, will not be the prime beneficiaries of the facility.¹ The mining company will be expected to share in construction costs for the project. However, without the power of eminent domain, the land in Centennial Prairie could not have been acquired for waste treatment, due to local opposition. Only by involving the

¹Final Environmental Statement. Lead-Deadwood Sanitary District No. 1, South Dakota Project No. WPC SD-200. March, 1972. p. 18.

Lead-Deadwood Sanitary District, a public agency, was the company able to use this land, and thereby cut their waste treatment costs to a minimum.

Out of an estimated construction cost of \$5,600,000, the EPA construction grant amounts to \$1,790,000, or about one-third. This might be viewed as government subsidy to private industry. Say, for example, that a heavily polluting industry in an isolated area is forced to meet minimum effluent standards. By joining a sanitation district which includes surrounding communities with minor pollution problems, the industry can indirectly receive an EPA grant for up to 30% of the control project cost and gain the power of eminent domain. A similar industry in a more populated and more diversified industrial area would receive less proportional help and could be shut down for violation of standards without major economic disruption to the area. If a new industry's water pollution comprises a large portion of the district's pollution, the industry enjoys a greater proportion of government aid than in an already polluted area. It seems that EPA grant policy encourages highly polluting industries to locate in unindustrialized areas with previously minor water quality problems.

A comprehensive water quality management plan is now being prepared for the Black Hills region by the Black Hills Conservancy Sub-District. EPA is providing 50% of the funds for the study through a Section 3(c) planning grant. Plan preparation and reporting will be completed in 1973. With this information, EPA can better evaluate future construction grants in the area. Only an interim basin plan was available when plans for the Lead-Deadwood project were considered. Being a rural area, no specific land-use plans have been formulated.

In summary, the Lead-Deadwood waste treatment facility will cause numerous land-use changes. One is the immediate change of 288 acres of pasture to treatment pond, and subsequent discouragement of development in the immediate area. Another is the vast improvement of water quality in Whitewood Creek, and subsequent encouragement of recreational, residential, industrial, and agricultural useage in the immediate area and also far downstream. There is a possibility of ground water contamination from the treatment pond, in which case ranching operations and several nearby communities would be faced with finding suitable water supplies. The project also brought forth controversy over the use of eminent domain by public agencies in land acquisition for largely industrial purposes. Guidelines for this sort of land acquisition are lacking.

APPENDIX VI
QUESTIONNAIRE RESPONSES FROM R/A AND DEPUTY R/A

ENVIRONMENTAL PROTECTION AGENCY
Region VIII, Denver, Colorado

Date: May 23, 1972
Reply to
Attn of: RA
Subject: Land Use Questionnaire
To: Jim Monaghan, YAB

Reference your land use questionnaire, the following is submitted:

EPA is definitely limited by the lack of a legislative mandate which would allow us to set standards for land use. With the establishment of such standards there should also be the strong authority to enforce them.

As far as the private sector is concerned we can impact land use or misuse where federal dollars are involved in a project. This would essentially be through the environmental impact statement route via NEPA. One limitation here is our lack of authority to demand an impact statement if a subject agency deems one unnecessary.

The above is equally applicable as far as Federal Government facilities are concerned. We bluff, recommend, and use many routes to influence the submission of statements, but we have no authority to demand.

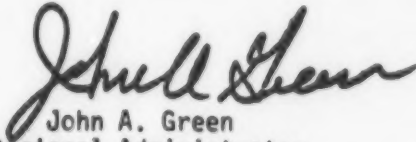
Impact statements are not really action documents anyway -- they are usually submitted where projects are nearly a "fait accompli"; consequently, the impact statements have little impact. This is not the way to do it.

What we require is a land use bill which will provide for proper planning guides, standards, and enforcement authority. I personally feel that this should be implemented jointly by federal and state agencies. Authorities for planning and enforcement should be delegated to the state with authority for Federal preemption if the state doesn't do the job.

There should be an overall state plan which establishes the guidelines with broad regional zoning. Other lower-level governmental entities (COGs, municipalities, etc.) should prepare plans

Page 2 - Mr. Jim Monaghan

which would conform to the overall state/regional plan. Delegation for enforcement could be accomplished on an individual selection basis.


John A. Green
Regional Administrator

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ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, DENVER, COLORADO 80203

TO
FROM

BA

DATE: June 15, 1972

SUBJECT:

Response to Questions on Last Page of Land Use Questionnaire

Mr. Jim Monaghan
Youth Advisory Board

Question #1:

Yes. I feel that EPA's involvement is limited by lack of mandate.

Question #2:

No. We are probably not doing all we can under existing authorities -- primarily because each authority has not been thoroughly examined with respect to its applicability to land use. (Hopefully, this will be one job of YAB land use study.)

Comment on Generalizations:

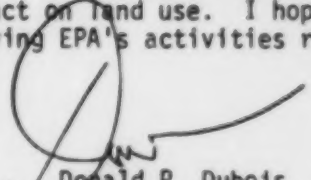
Water quality standards are set and other programs conducted to achieve clean water for various beneficial uses, including health but also recreation, water supply, etc. We are going beyond the simple achievement of water quality standards by requiring application of best practicable treatment of industry by 1976 and attainment of stream standards (whichever is most stringent). We also require secondary treatment of municipal waste -- whether or not water quality standards would dictate this high level of treatment.

The statement, "...standards are set with little regard to comprehensive community plans. . .", etc., is not clear to me. It is true that standards for some streams need to be upgraded to permit higher uses. This is one thing we are trying to accomplish in the South Platte. I think a larger aspect than standards which bears on the issues discussed is our construction grant program. The location, size, and type of intercepting sewer and waste treatment plants can have a major effect on the amount and location of growth (hence, land use) in a community. Interim water quality management plans are now a prerequisite to the award of construction grants. However, I'm sure that the fully developed plans which will be required by July 1973 will need to give more consideration to the broad questions of land use.

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Page 2 - Land Use Questionnaire

In summary, I feel that EPA lacks a clear mandate in the land use field, but that a number of our authorities (NEPA, Water Quality Planning, Construction Grants, Solid Waste Planning Grants, Air Quality Plans, etc.) do impact on land use. I hope the YAB will recommend methods for improving EPA's activities related to land use.



Donald P. Dubois
Deputy Regional Administrator

APENDIX VII
NLUTF Denver Outline
for Land Use Activities

Youth Advisory Board's Land Use Activities

proposed by the Youth Advisory Board's Land Use Task Force

approved by the National Youth Advisory Board at the

Denver National Meeting 2/27/72

Objective: The Youth Advisory Board will look into the multiple interlocking problems of land management from the standpoint of how they affect the Environmental Protection Agency's existing responsibilities.

To facilitate this objective the YAB will undertake the following land use activities.

Activity I: To begin immediately, the YAB will identify EPA's impact on land use management through national and regional investigations of its existing legislative authority, policy and procedures; including, but not limited to, the establishment and regulation of standards, environmental impact statements, and granting programs. The YAB Land Use Task Force will issue a preliminary report to be given to the Administrator by June 1, 1972.

Activity II: Commencing June 1, 1972, the YAB and a supportive intern staff will undertake field studies to identify and assess critical land use problems and how environmental quality is affected by past and present land use practices.

A. Within each EPA region, the following land use areas will be examined.

1. Urbanization
2. Agriculture
3. Waste Disposition
4. Recreation
5. Mineral Extraction
6. Transportation
7. Wilderness

B. Integration and correlation of regional studies to develop a national perspective.

Activity III: Commencing June 1, 1972, the YAB and a supportive intern staff will undertake supportive governmental studies to:

A. Continue identification and assessment of EPA's impact on land use management.

1. establishment and regulation of standards
2. environmental impact statements
3. proposed legislation
4. granting programs
5. other programs

- B. Identify other Federal agencies' significant land use activities, environmental considerations, and how they relate to EPA's mandated authority to protect and enhance the quality of the environment.
 - 1. existing activities
 - 2. proposed activities
 - 3. proposed legislation
- C. Identify the extent of State, regional (intra- and inter-state), and local land use management activities, authorities, and regulations.
 - 1. method of environmental considerations
 - 2. method of public participation
 - 3. relations with the Federal Government

Activity IV: YAB land use management recommendations will be reported January 1, 1973, and thereafter.

- 1. Regionally
- 2. Nationally

Activity V: Potential reporting mechanisms.

- A. Congressional Symposium
- B. Regional multi-dimensional presentations (EPA)
- C. National multi-dimensional presentations (EPA)
- D. Presentations to other Federal agencies
- E. Seminars/briefings to State, regional, and local agencies
- F. Seminars/briefings to nongovernmental entities
 - 1. environmental organizations
 - 2. educational institutions
 - 3. other

Responsibilities of YAB Land Use Study Participants

Regional Land use Task Force (Interns, YAB and EPA): The primary purpose of the Regional Task Force will be to collect data (research interviews, and visual documentation) about critical land use problems in the following land use areas:

- Urbanization
- Agriculture
- Waste Disposition
- Recreation
- Mineral Extraction
- Transportation
- Wilderness

The Regional Task Force will study EPA's impact on land use management:

- establishment and regulation of standards
- environmental impact statements
- proposed legislation
- granting programs
- other programs

They will look at other Federal agencies' significant land use activities in the region, their environmental considerations and their relationship with EPA. And the Regional Task force will study the extent of state regional and local land-use management activities, authorities and regulations. (to be included)

- method of environmental considerations
- method of public participation
- relations with the Federal Government

The Regional Task Force will then be responsible for developing a Regional Report and Presentation of the Task Forces findings and regional and national recommendations.

Regional Land Use Task Force Coordinator: The Regional Land Use Task Force Coordinator will be responsible for coordinating and developing all the Regional Land Use Task Force work. The Coordinator will designate the work loads and the working areas (states and localities) for the intern staff. It will also be his or her responsibility to insure that the Task Force Members do not engage in unnecessary duplication. Other tasks will include a short weekly report (status) to the National Office, and serving as liaison with the National Office and the National YAB Land Use Study Coordinators.

The Regional Coordinator will be responsible for the development of the Regional Report with regional and national recommendations. And finally, the Regional Coordinator in conjunction with the Field and Study program will be responsible for the development of the multi - dimensional presentations to be made to EPA; state, regional and local agencies; and to other non-governmental entities.

Washington Land Use Task Force: The Washington Land Use Task Force will continue the identification and assessment of EPA's impact on land use management; in the areas of :

- establishment and regulation of standards
- environmental impact statements
- proposed legislation
- granting programs
- other programs.

They will also analyze some of the other federal agencies' significant land use activities (current and proposed activities and proposed legislation), their environmental considerations, and how they relate to EPA's mandated authority to protect and enhance the quality of the environment. They will be responsible for developing their findings and recommendations into a report which can be integrated with the National Report.

Washington Land Use Task Force Coordinator: The Washington Coordinator will distribute the work loads for Task Force Members and coordinate their activities to avoid duplication. The Coordinator will serve as liason with the National Coordinator and the Regional Coordinators. He or she will also be responsible for submittal of weekly status reports to the National Office. The Coordinator will oversee the development of the Washington Task Force's findings and recommendation into a report which can be integrated with the National Report.

National YAB Land Use Study Coordinators: The Study Coordinators will synthesize the Preliminary EPA Reports and from the regions for presentation to W.D.R. Each of the four coordinators (1. field studies, 2. EPA Studies, 3. Other Federal Agencies Involvement Studies, and 4. State, Regional, and Local Studies) will be responsible for developing a training program for the regional interns to be working in that study area. The Study Coordinators will be responsible for overseeing the study activities in the regions and Washington. The Study Coordinators will assist the regions in gaining information from Washington, facilitate intra - regional contact to avoid a needed duplication and provide a national perspective to the Regional Task Forces. A weekly newsletter, consisting of regional findings and activities, will be issued by the Study Coordinators. They will also, be responsible

for developing the National Report and the associated presentations.

National Land Use Coordinator: The National Coordinator will be responsible for the development of the preliminary EPA Report. He or she will organize, with the Study Coordinators, the Regional Land Use Task Force Training Sessions. The National Coordinator will keep in direct contact with all regions to facilitate the development of the Regional and National Report. Responsibility for developing the final land use reports will lie with the National Coordinator.

National Land Use Task Force (NLUTF)

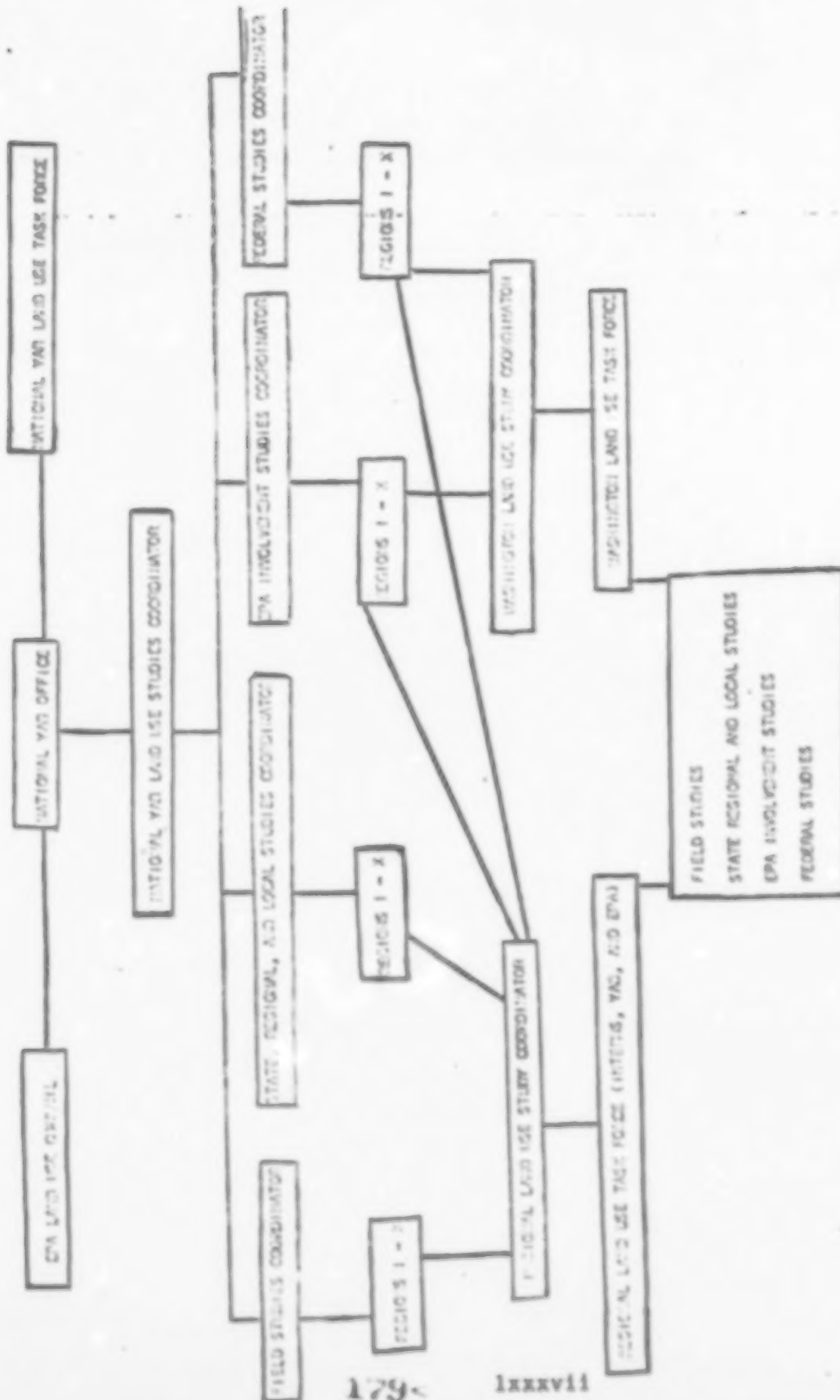
The NLUTF (1 YAB member/region) will provide direction for the coordination of the Land Use Activity by the National Office. The Objective of the Land Use Activities and Areas to be dealt with has been established by the NLUTF in Denver (see TAB A)

EPA Land Use Council

An EPA Land Use Council will be assembled to provide advice to the National YAB office staff coordinating the YAB Land Use Activities. The Council may also provide insights into new areas and establish contacts throughout the Agency, at Headquarters, with individuals that should be contacted by the National staff who can provide information on how EPA's making defacto Land Use decisions.

National YAB Office

The Two National elected representatives will be responsible for implementing the direction of activities given by the National Land Use Task Force, and will work directly with the coordinator of the Land Use activities. The National office representatives and staff will meet periodically with EPA Land Use Council seeking advice on substantial areas to look into determination of EPA's Land Use involvement.



PART II. OTHER FEDERAL AGENCIES

Introduction

Land-use in Region VIII is influenced to a great degree by Federal agencies, if only from a standpoint of ownership. The Federal government owns about 32 percent of the land in the Region. The major land management agencies include the Bureau of Land Management with 55 million acres, the Forest Service with 50 million acres, and the Park Service with 5 million acres. Other landowners include the Bureau of Sport Fisheries, the Bureau of Reclamation, and the Bureau of Indian Affairs.

In addition to land management agencies, several agencies have a great deal of impact on private land through their policies and programs. The Soil Conservation Service and the Agricultural Stabilization and Conservation Service are included in Part II.

Although the policies of Federal agencies are fairly well standardized throughout the country, features of these agencies' operations that are unique to Region VIII will be explained in the following pages.

CHAPTER I. BUREAU OF LAND MANAGEMENT IN REGION VIII

1. General

a. The Bureau of Land Management holds more land than any other Federal agency in Region VIII: 55 million acres. Until recently, it has done far less land-use planning and management than the Forest Service or the Park Service. This is due partly to the fact that the BLM's predecessor, the Land Office, was primarily a land disposal agency, and not a land management agency. The primary responsibility of the Land Office was to dispose of public land as quickly and efficiently as possible.

b. At one time, all the land in Region VIII was public land. During the settlement period, much of the desirable land was homesteaded or given to the railroads. By the early 1900's, most of the Forest Service and Park Service land had been set aside. Both agencies were very selective and they removed the most productive and most scenic land from the public domain.

c. By far, most of the BLM land in Region VIII is semi-arid grassland and desert. Because of government land disposal policies, the public lands are scattered in small parcels or checkerboard patterns. This tends to benefit utilization by ranchers for grazing, but makes it difficult to administer land for timber production, recreation, wildlife, or the other uses stated in the Multiple-Use Act.

2. Grazing

a. Traditionally, though now not as much as before, public land in Region VIII has been used for livestock grazing. About 43 million acres out of a total of 55 million acres are in grazing districts. Before the Taylor Grazing Act of 1934, ranchers utilized public lands, both legally and illegally, to the greatest extent possible, ignoring the concept of sustained yield. The grasslands in the Great Basin of Utah, Wyoming, and Nevada suffered grazing damages from 1890-1910 which are still evident today. Once dominant and desirable grass species are now minor constituents of the rangeland, replaced by less palatable grasses. This range deterioration undoubtedly had, and still has, an effect on the land as wildlife habitat and watershed. The Great Plains, east of the Rocky Mountains, also suffered damage by soil erosion and loss of forage productivity, but did not undergo the severe grass composition changes of the Great Basin. By far the most damage done on the Great Plains was due to cultivation, the cause of the Dust Bowl of the 1930's.

b. The Taylor Grazing Act of 1934 provided for the regulation of the number of livestock grazed on a given area and regulation of seasons for livestock use of public forage. It also included classification authority for public domain lands, which effectively put a stop to homesteading on lands that were unsuitable for agricultural use. This Act was the first to give

the government authority to determine land-use of the public domain.

c. In areas of serious range deterioration, the BLM is carrying out a program of range reseeding. In less critical areas, livestock management under the permit system is allowing the range to recover somewhat from the ravages of the past. In general, the BLM has been able to minimize overgrazing because of the Taylor Grazing Act and cooperation from ranchers. Most of the ranchers using BLM land are small operators; that is, over half have less than 50 head of cattle or the sheep-equivalent.

d. Since the Multiple-Use doctrine was adopted by Congress, grazing has not played the dominant role it once did in the BLM's management philosophy. In Region VIII, public land usage is shifting to mineral exploitation and, to a lesser degree, recreation.

3. Mineral Development

a. Under the Mineral Leasing Act of 1920, the BLM is responsible for issuing leases for extraction of coal, gas, oil, oil shale, and a few other minerals. Of all the leases issued by the BLM, about half are issued for the state of Wyoming alone. Utah and Colorado are runners-up. This gives some idea of the magnitude of energy resource development on public land in Region VIII.

b. Two major mineral developments are being considered in Region VIII, and the BLM is involved in both. The largest and

most immediately important development is the Powder River coal deposit of Wyoming and Montana. Another mineral of great potential importance is an oil shale deposit in the Green River Basin of Colorado, Utah, and Wyoming.

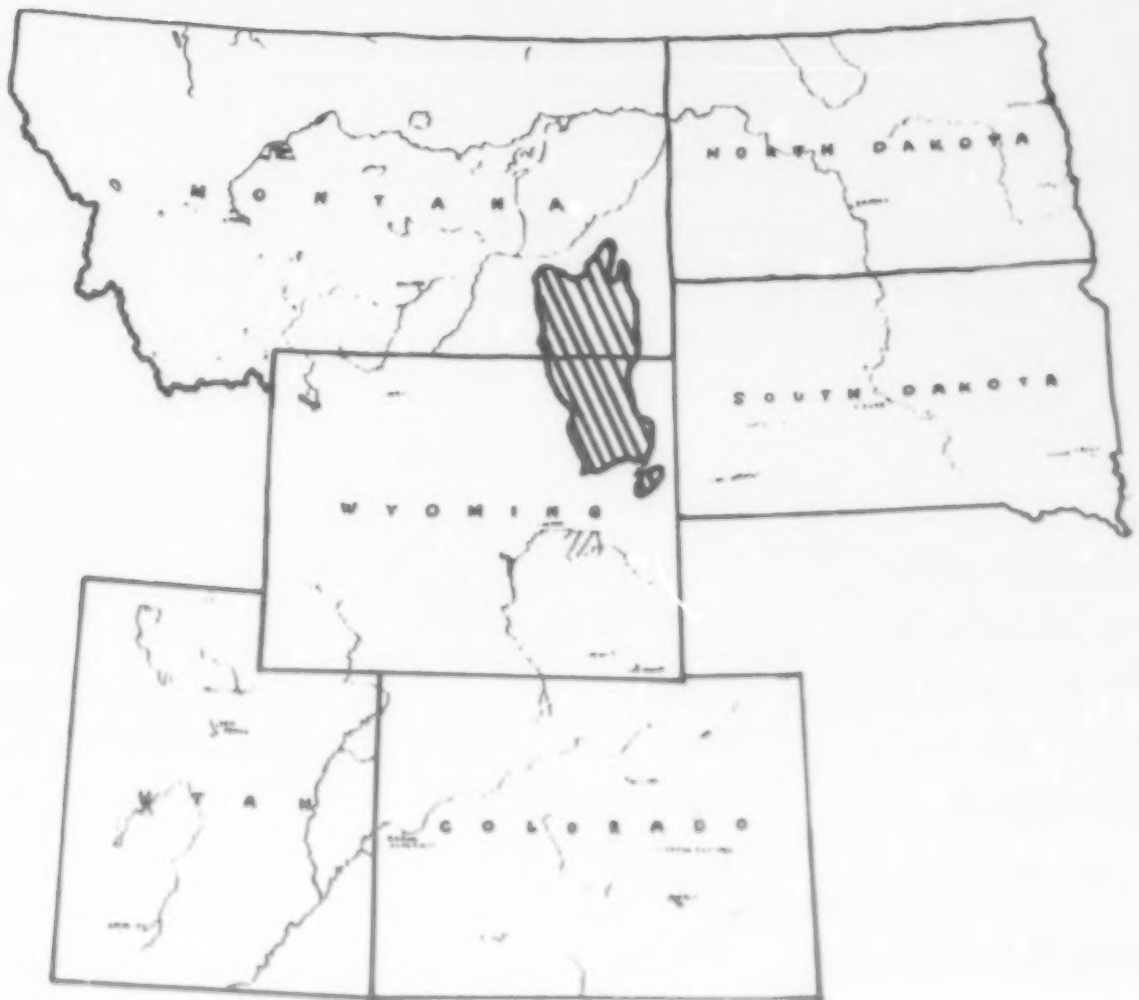
3.1 Powder River Coal Development

a. The Powder River Basin coal is only a part of the immense Fort Union coal formation, which contains approximately 40% of the nation's coal reserves amounting to an estimated 1.5 trillion tons. The Powder River deposit is not a new discovery by any means, but widespread mineral speculation has taken place there only within the last seven or eight years. This can be attributed to new developments in coal gasification and other forms of coal utilization, along with improved markets for future energy because of the so-called "energy crisis."

b. The Bureau of Land Management holds mineral rights to about half the coal in the Powder River Basin. Because these tracts are scattered throughout the basin, the BLM coal-leasing policies will be a determining factor in development of the private mineral rights.

c. Competitive lease offers are attracting bonus bids of over \$500 an acre instead of the traditional dollar or so. Lease application are increasing in size from around 100 acres to about 5,000 acres. So far, the leases, preference right applications, prospecting permits, and competitive lease applications come to a total of 285 coal leasing actions involving around 5.5

POWDER RIVER SUB-BITUMINOUS COAL DEPOSIT



Various estimates make it clear that there are in excess of 35 billion tons of strippable sub-bituminous coal in the Powder River Basin.

million acres of federal coal rights. This is 10% of all the land the BLM holds in Region VIII. Of these actions, 152 involving 387,000 acres are final and obligate the coal resource.¹

d. The Powder River development is creating extreme difficulties for the Bureau of Land Management. The BLM is under pressure from speculators, power companies, and "energy crisis" advocates to lease as much coal as possible. On the other hand, the multiple-use doctrine requires that consideration be given to the land-use conflicts the strip mining creates.

e. Coal mining in the Powder River basin will conflict with oil, gas, bentonite, and uranium extraction in the same area. All four are of major significance. Nearly 30% of the world's reserves of valuable bentonite are found in the basin. Strip mining will also conflict with livestock forage production. More than 1,960 ranching operations depend on the forage resource of the basin, which is valued at approximately \$35 million annually.

f. The Powder River basin supports a diverse game population, accounting for 350,000 hunter days and 210,000 fisherman days annually. In addition it supports several animals on the rare and endangered species list, including the Black-footed Ferret, Prairie Falcon, and American Peregrine Falcon. Several private buffalo herds graze the basin, one of which (over 1,800 head) is the largest private herd in the U. S.

¹"Briefing Paper on the Powder River Basin;" Department of Interior.

g. As in all the Rocky Mountain West, water is at a premium in the Powder River basin. Immense quantities of water will be required to develop the coal through coal gasification or power generation. It was mentioned previously that coal development would conflict with other mineral development. A primary reason for this is the lack of available water. If any one of the minerals in the basin is developed to its fullest, it will pre-empt development of the other minerals, simply because of the water situation. Obviously, there is a great deal of conflict between mining interests because of this. Still another conflict has developed between the miners and farmers, who want the water for irrigation. Farmers' co-ops have been purchasing water rights and trying to buy reservoirs, so that they can sell the miners only that water which is not used for irrigation. Thus far, the farmers have been only partially successful.

h. An estimated 3.5 million recreational visits are made annually to this area, including sightseers. No matter how well strip mine reclamation is carried out, it is obvious that the aesthetic values associated with a diversity of natural land forms will be lost.

i. If coal development is carried out, the basin's population is expected to jump from 130,000 to nearly a million people. Such a drastic increase will be accompanied by haphazard land development, for Wyoming counties are ill-equipped to plan

for growth on this scale. In a mono-dependent economy such as would be created in these new communities, consideration should be given to what will happen when the coal resource is depleted.

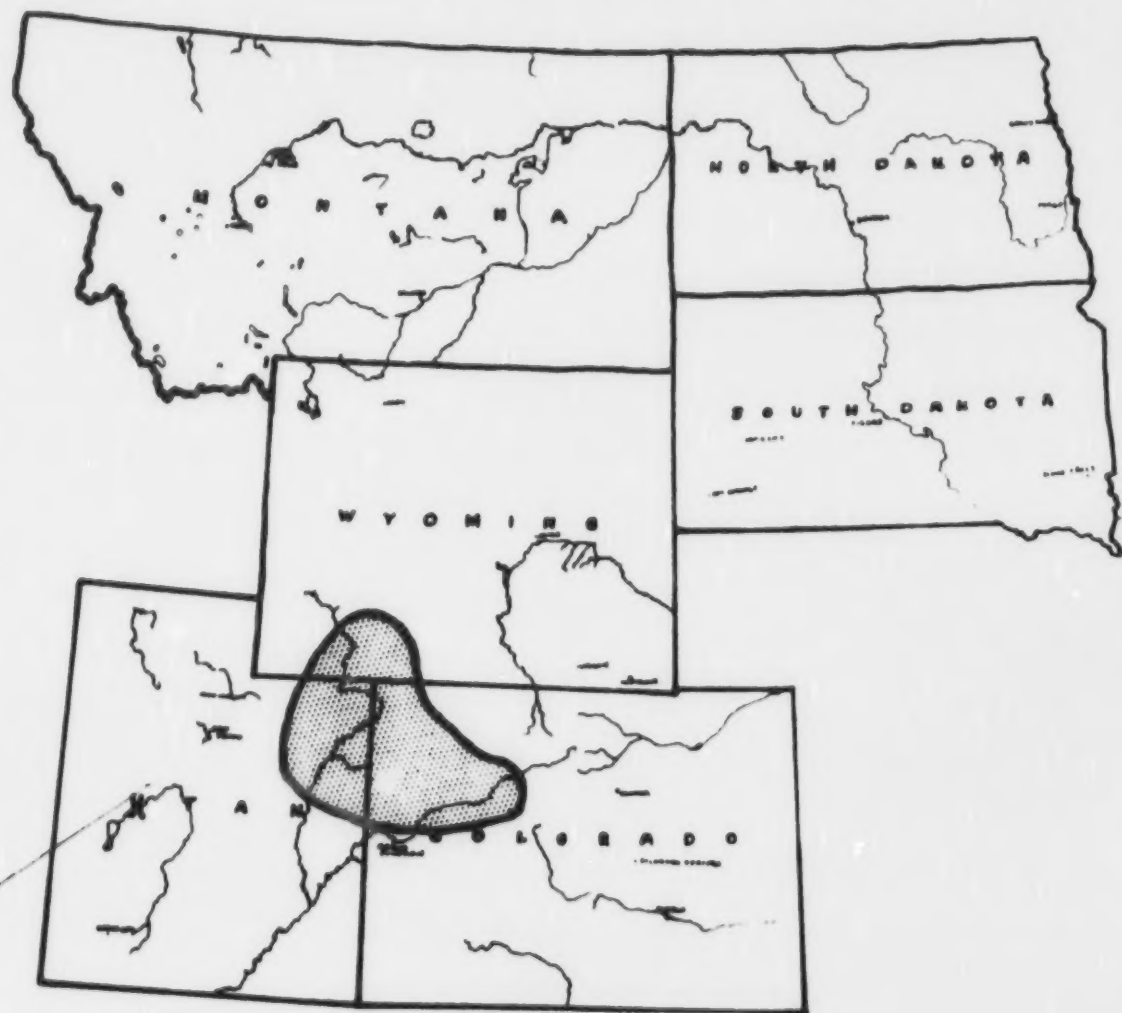
j. Thus, BLM leasing policies in the Powder River basin will affect more than just the public land. BLM leasing and land-use policies will determine private land-use, the socio-economic structure, and environmental quality for the basin and the entire region. In short, resource extraction in the Powder River Basin will have national significance and land-use ramification of almost unimaginable and certainly historical proportions.

3.2 Oil Shale Development

a. Region VIII has the largest and richest oil shale deposit in the country, and the BLM owns the mineral rights to 80 percent of it. Several oil companies have set up pilot projects on private land to determine the feasibility of using oil shale as a new energy resource. The technology is available, and some of the companies are ready to begin large-scale oil shale mining and processing on public land.

b. Oil shale, like coal, is covered by the Mineral Leasing Act of 1920. In 1968 Secretary of Interior Udall called for bids on oil shale leases, but received only three, all too low to be considered. BLM officials believe this lack of interest was caused by the Prudhoe Bay oil discovery a few days before the bids were released, and the fact that Udall was a lame duck official at the time. The oil companies were not

OIL SHALE



The shaded area marks the location of the major oil shale deposits under consideration for development. An estimated 80 billion to 2 trillion barrels of oil are thought to be trapped within these shales.

willing to risk the uncertain policies of a new Secretary. Subsequently, Secretary Hickel dropped the oil shale program during his time in office.

c. However, the BLM has once again become involved in oil shale leasing, but with a different approach. The BLM proposes to lease six prototype areas in Colorado, Wyoming, and Utah. These six sites would involve about 50,000 acres in all. Because of the National Environmental Policy Act, the BLM has written a draft environmental impact statement and public hearings are now being held. The hearings have brought out several major land-use conflicts which will be encountered in oil shale development.

d. As in the Powder River basin, development of one mineral will directly conflict with other mineral development; in this case, gas and oil. One of the proposed prototype tracts (tract CB) is on a federally approved gas and oil unit area. In addition, Project Rio Blanco, a nuclear gas stimulation project, is in the oil shale region. Natural gas interests believe the Department of Interior is trying to pre-empt the Atomic Energy Commission's Rio Blanco Project by encouraging oil shale development there.

e. The location of the prototype tracts has brought on controversy because none of them are suitable for experimenting with in-situ shale processing. In-situ is potentially the least degrading of all possible mining methods, because the shale is not removed from the deposit for processing. It is processed

in place, and the products are carried to the surface by pipeline.

f. Both open pit and room-and-pillar mining present problems of immense quantities of crushed and processed shale. Even if the spent shale is put back in the mining cavern, there is still a great deal left over. The waste material expands when the oil shale is processed, to 1½ times its original volume. The only solution offered thus far is filling up canyons with spent shale. Shale disposal of this sort will have visible and immediate land-use ramifications. There is danger of water contamination from runoff from the shale piles, and important wildlife habitats will be covered. The rugged, mountainous terrain will be reduced to sterile, man-made plains of mining wastes. Revegetation is highly questionable in this semi-arid region. Yet, the oil companies tend to discount values associated with this relatively unspoiled land. Their attitude is summed up in a comment by an oil company representative, who said in the Denver oil shale hearings that oil shale development will "maximize use of low-value lands."

g. Shale processing will require a great deal of water, a resource that is in short supply in the Rocky Mountains. A single commercial oil shale operation would consume at least 3 million gallons of water daily. None of this water would be returned to natural streambeds.²

²Bruce H. Hamilton, Oil Shale Development: A Colorado Perspective (ECO Oil Shale Study Group, Colorado State University, March 1972), p. 9.

h. The Bureau of Reclamation is already moving to provide the water that the oil shale developers will need if they are allowed to proceed. A Reclamation proposal called the Yellow Jacket Project would involve three reservoirs in the White and Yampa river basins. Objections have been raised to this project because it would destroy a valuable deer and elk habitat by inundation and promotion of irrigation. An elk calving area would be inundated. About 1,000 man-days of deer hunting would be lost because of irrigation. The draft environmental statement on the Yellow Jacket Project is written and is now under review by the Region VIII EPA and other parties. It is of great significance because the project is inextricably tied to oil shale development.

i. Also of significance is the fact that the Bureau of Reclamation depends heavily on BLM mineral development for its funds. 52.5 percent of the BLM's receipts for mineral leasing and land sales is put directly into a Reclamation Trust Fund, which is used heavily by the Bureau of Reclamation.

j. Oil shale development and all the land destruction that comes with it, including the Yellow Jacket Project, is a product of the "energy crisis" scare. If, in fact, an energy crisis does exist, oil shale very likely may not be the answer. If, by 1985, the shale fields are producing a million barrels of oil per day (a rather optimistic Department of Interior estimate), this will meet only 4-5% of the total U. S. energy demand.

4. The 1872 Mining Act

a. The 1872 Mining Act has contributed more to the cause of public land abuse in the West than any single law passed by Congress. It was enacted in the belief that mining was the most important, if not the only reasonable use of public land. Since no explicit recognition was given to other potential uses, the law has enabled mining claims to override many other claims for public land.³ The mining law has been the shadow under which land for thousands of summer cabin sites and similar non-mining activities has been claimed. In 1908, a canny speculator (later a U. S. Senator) saw the tourism potential of Arizona's Grand Canyon, and sought to control access to it with a series of mining claims. The move would have been entirely legal, as the Canyon was part of the public domain. President Theodore Roosevelt saved the canyon by declaring it a National Monument, an authority given him only two years earlier.⁴

b. Under the 1872 Mining Act, the BLM (and the Forest Service) has no control whatsoever over mining claims for gold, silver, uranium, and other "hard" minerals on public land. In fact, the mineral claimant registers with the county courthouse; he need not notify the BLM. For the claim, he pays a maximum of \$5.00 per acre, regardless of the land's surface value. As outlined in the Forest Service chapter, the mining interests are

³ Marion Clawson, The Bureau of Land Management (New York: Praeger Publishers, Inc., 1971), p. 123.

⁴ Stewart L. Udall, The Quiet Crisis (New York: Holt, Rinehardt, and Winston, Inc.,

allowed to destroy the land surface and watercourses to any extent necessary to extract the mineral, including removal of vegetation and topsoil.

c. BLM managers are extremely unhappy with the 1872 Mining Act. So long as it exists, miners can dictate land-use policy to the Bureau of Land Management. Some of the major mining companies are also displeased with the law. The 20-acre claim is too small for a large company to work with, and there is uncertainty of title until a definite discovery is made. The BLM has written a bill for leasing of hard minerals, much like the Mineral Leasing Act of 1920 for coal, gas, and oil. Passage of this bill would allow the BLM to bring mining on public land under public control, and would be of great value in helping the BLM to fulfill the intent and purpose of the Multiple-Use Act. The new bill has encountered stiff opposition in Congress, notably in the House Interior Committee.

5. Land-Use Planning Process

a. The thrust of the BLM's land-use planning process (which is only a few years old) is to make information available to the district manager, so he can make decisions based on all alternatives. The planning process helps identify what the land is like, what it can be used for, and the land-use conflicts that are inherent under the multiple-use doctrine.

b. The public land is first divided into "Planning Units." For each unit, a resource inventory is done. This base information is then given to specialists in range management, forestry,

mining, recreation, watershed, and wildlife. Each specialist identifies the areas which are desirable or undesirable for his particular resource-use, using acetate map overlays and written description. This tunnel vision approach for each resource-use is the crux of the BLM planning process. It is difficult for resource planners to ignore their multiple-use training and to think narrowly about one resource to the exclusion of all others. Yet, this is exactly what must be done in order to bring out all the alternatives and describe the full potential for each resource. Each specialist formulates a Program Activity Plan (such as Timber Management Plan, Grazing Management Plan, Wildlife Habitat Management Plan).

c. The Program Activity Plans, including the acetate overlays, are then combined to identify resource-use conflicts. The results of the planning process then go to the district manager. It is up to him to bring his management policies in line with this information and to resolve the land-use conflicts uncovered in the planning process. The advantage of this systematic planning is that each resource use is treated with equal importance. It helps overcome the inherent biases of district managers. A manager trained in forestry will tend to emphasize timber production to the exclusion of other uses, and so will managers trained in other fields emphasize one use or another. Systematic planning is an attempt to alleviate this bias to an extent.

d. The BLM claims to have the best system of any land management agency. How extensive the planning machinery is used depends on the district manager, however. Ultimately, he is responsible for the land-use decisions that are made. He is subject to political pressure, public interest groups, industry pressure, and his own moral interpretation of what "multiple use" and "public good" really mean. The BLM planning process is not an attempt to circumvent that kind of human judgment. It is an attempt to eliminate some of the errors caused by misinformation, bias, or no information at all.

6. Outdoor Recreation

a. Recreational use of BLM land in Region VIII is of a rather unusual nature. As stated earlier, most of the scenic public land was removed by either the Park Service or the Forest Service. The main attractions of BLM land include bodies of water, abandoned mining towns, and geologic formations.

b. Camping pressure, a major problem for the Park Service and the Forest Service, has not been a problem for the BLM. The Bureau of Land Management has constructed very few camping facilities, and has not been under particularly heavy pressure to construct more. About half the visits to BLM land are for sightseeing. Even if these visits are omitted, the average visit is for only half a day. Recreational use of this sort is hard to measure and hard to control.

c. A major trend in recreational use of BLM land is an increase in snowmobile and all-terrain vehicle traffic. Many attractions which were once protected from human destruction by virtue of their remoteness have been opened up by these vehicles. A good example is the ghost town of Garnett, Montana. Until recently, Garnett was only occasionally visited and it remained in its original condition. With the advent of the snowmobile, Garnett was made much more accessible. Vandalism is common in the old ghost town now, and BLM officials are hard pressed to put a stop to it. Places like Garnett are fast becoming the rule rather than the exception. It is clear that the BLM must take a harder look at what constitutes acceptable recreational use, and what does not.

d. Another common recreational use of BLM land is amateur rockhounding. This includes panning for gold, looking for uranium, fossil hunting, and other pursuits. Recreation specialists in the BLM would like to set areas aside specifically for this purpose. However, under the 1872 Mining Act all public land is subject to commercial development. Once again, the 1872 Mining Act stands in the way of true multiple-use.

e. The Bureau of Land Management has only recently involved itself in outdoor recreation planning. It has traditionally been more concerned with keeping the public lands clean (Johnny Horizon anti-litter campaign). With the new BLM planning process, at least the machinery is there to encourage land managers to consider recreation as a legitimate use of land.

7. Forestry

a. Only 1.4 percent of the BLM land in Region VIII is commercial timber. Even this commercial timber is not normally large enough to be valuable as sawtimber. This is in contrast to the extensive tracts of valuable sawtimber held by the BLM in Oregon and Washington. BLM timber plays a minor role in Region VIII, where the timber industry is geared to large Forest Service timber sales. It is discussed here only because of the rather innovative system that the BLM is using to inventory and assess its timber in the Region.

b. A forest inventory is now underway. It will be completed in about five years. As the figures come in, they are entered into a computer. The data includes information on climate, soils, tree species, and other factors of tree growth. A forest growth simulation model is constructed in the computer in an attempt to determine the allowable cut that will provide sustained yield on a given stand. Once a growth simulation model is constructed, the data from the forest inventories can be processed to give the allowable cuts in any given area. This will insure that BLM forest land meet the "sustained-yield" requirement set down by law.

c. The multiple-use concept is so nebulous that it will be much harder to computerize. Attempts will be made to incorporate multiple-use considerations into the forest simulation model, but the results are open to question.

CHAPTER II. FOREST SERVICE IN REGION VIII

1. General - Background

a. The Forest Service is responsible for nearly 50 million acres of land in Region VIII, in every state but North Dakota. Most of this land is above 8,000 feet elevation in the Rocky Mountains. A small parcel of land is also found in the Black Hills of South Dakota.

b. The U. S. Forest Service in Region VIII is responsible for managing a diversity of forest vegetation types and terrains unique to the nation. Generally, four major forest vegetation communities are found in these National Forests. Each community has its own capabilities and limitation, and must be managed in a different way.

(1) The ponderosa pine community begins at about 8,000 feet elevation. This forest has a park-like appearance, with widely-spaced trees and an understory of grasses and forbs. The ponderosa pine community is the most adaptive to diverse land-uses of all the mountain forests.

(2) At about 9,000 feet, the vegetation gradually changes to the lodgepole pine community. In their natural condition, these trees seldom reach sawlog size, but grow in dense stands of tall, slender trees, often referred to as "doghair stands." Undergrowth is practically non-existent in a mature stand. Most of the timber cutting in Region VIII takes place in the lodgepole pine community.

(3) At about 9,500 feet, the vegetation blends into

another community, the spruce-fir. This forest consists largely of Engelmann spruce and subalpine fir. The spruce-fir forest has some importance in logging, but is more important for holding the winter's snowfall in storage through the summer.

(4) At about 11,000 feet, the climate becomes so cold that trees cease to grow. Most of the alpine tundra community in Region VIII is managed by the Forest Service. This community, dominated by tiny, close-growing plants, is more fragile and easily destroyed than any plant community in the Region. It supports a variety of wildlife, and has been used (and misused) in the past for sheep grazing.

c. National Forests are, by law, to be managed under multiple-use. Multiple-use is defined as: "management of all renewable surface resources of the forests so that they are used in the combination that will best meet the needs of the American people." Dominant use is another land management concept advocated by the Land Law Review Commission. Multiple-use and dominant use are only concepts, however. The most important point is the way these concepts are carried into practice by the Forest Service in their management decisions and planning processes. These will be covered in more detail later in this land-use report.

d. The National Forest system in Region VIII is discussed here in sections dealing with the major uses to which the land

is put; namely, timber production, range for livestock, wildlife habitat, watershed, recreation, and mining. Finally, the multiple use planning process and environmental impact statements will be reviewed in the context of land-use impact.

2. Timber

a. Logging in Region VIII is economically marginal. Due to lack of rainfall and a short growing season in the higher altitudes, timber simply does not grow fast enough to support a private forestry operation. A minimum wood growth of 50 cubic feet per acre per year is generally accepted as bare minimum for an economically productive forest. Average growth in this region ranges from 25 cu. ft./acre/year in Colorado to 35 cu. ft./acre/year in Montana. This compares to 150-200 cu. ft. in the commercial forests of the South. Thus, timber harvest is taking place on Forest Service land in a region where forest management is not a profitable private enterprise.

b. The costs of maintaining a forest to maturity are high. They include fire protection, insect and disease control, timber stand improvement, administration, and the hidden cost of tying the land up in timber production for 100 or so years. All these costs are borne for the timber interests by the Forest Service. When the Forest Service is ready to make a timber sale, the selling price is not based on the costs incurred in maintaining the timber. Instead, the Forest Service sets the selling price

at a level where the timber interests can make a reasonable profit (8-20% of the working and fixed capital investment).

c. A stand of timber is not permanent by any means. When a stand reaches maturity (100-150 years in Region VIII), it becomes highly susceptible to natural enemies, including fire, disease and insects, and blowdown from wind. Nature destroys the mature stand by one means or another, and the cycle begins again. In the National Forests, where the resources are managed to provide for the needs of the American people, this natural harvest represents an annual loss of wood that could be used. In this context, the market for wood here is grossly inadequate to provide enough timber harvest to maintain vigorous growth of young stands and prevent loss of overmature timber.

d. Still, contrary to traditional forest management precepts, what is good management for timber is not necessarily good management for wildlife, watershed, or other values. Loss of the natural fire regime means loss of certain fire-adapted species like aspen. Absence of dead snags results in loss of certain wildlife species that make use of them. Clearly, utilization of all available forest land is not a desirable end.

e. Much more Forest Service land is being logged than is actually necessary to supply present and future wood

product needs. There are two reasons for this: wood waste and lack of intensive timber management. Both stem from economic considerations. Wood in Region VIII is a low-valued product, thus only the best is removed and transported, and very little is expended to replace or improve timber stands. With intensive management, wood growth in the Region (25-35 cu.ft./acre/year) could be more than doubled. Thus, the acreage harvested could be cut in half. These "intensive" practices include thinning, pruning, partial cutting, and other things which have been common practice in Europe for centuries. The success of the Tree Farm movement in America shows that intensive timber management can be successful in this country also. It is still, however, cheaper to log extensive tracts of Forest Service wildland than it is to "farm" small tracts for wood production.

f. The clearcutting controversy got its start in Region VIII, namely in the Bitterroot National Forest in Montana. The excessively large clearcuts made in the lodgepole pine sometimes involved entire sides of mountains. Here was a case of flagrant disregard for multiple-use. The dominant use was logging, and the land was good for nothing else when the loggers left. As a result, clearcutting has received much bad publicity. Actually, clearcutting is the only way to get successful regeneration of lodgepole pine. The young seedlings require direct sunlight to survive. In

a natural setting, lodgepole pine only reproduces after a natural disaster levels all the trees in an area. Clear-cutting in itself is not the villain. It is the large, carelessly executed clearcut that gives objectionable results. It is important that poorly engineered logging roads, failure to insure regeneration, and destruction of water-courses not be accepted as a part of logging. These things can and should be avoided.

g. The Forest Service in this region has now set 40 acres as a maximum clearcut size. This is large enough to insure regeneration and forage for wildlife, but small enough to provide protection for the watershed and a minimum of aesthetic degradation. The USFS also requires these cutting blocks to be cut in irregular patterns. This is an attempt to imitate the effect of natural openings in the forest.

h. These clearcutting size and shape regulations have not solved one problem in Region VIII, however. While clearcutting is the only valid method of harvesting lodgepole pine, it is not at all suited to harvesting Engelmann spruce. Spruce seedlings require shade to grow. The sunny openings of clearcutting makes spruce regeneration nearly impossible. In the spruce-fir forest, either the selection or shelterwood method should be used. These methods are more expensive, thus the clearcutting in the spruce continues, despite regional directives to end it. It has caused

some controversy among professional foresters, but has not received the publicity given the Bitterroot practices.

3. Forage

a. National Forest land provides some range for livestock, but the bulk of grazing land in Region VIII is administered by the Bureau of Land Management. Range for cattle in the National Forests is found mostly in the ponderosa pine community. If not abused, this plant community provides excellent range, and is not damaged by this type of use.

b. Sheep grazing is not quite so well adapted. Sheep have traditionally been grazed on the alpine tundra. As stated before, this is an extremely fragile environment. Century-old wagon trails can still be distinguished in the slow-growing vegetation. Conflicting studies have been conducted, but there is reason to believe that domestic sheep grazing in the tundra compete successfully with wild bighorn sheep for food. Also, if the sheep are not moved around frequently, the hoofs damage the soil structure and cause erosion. The Forest Service has neither the personnel nor the time to make sure the shepherds leasing the land keep their herds moving from place to place. It is generally felt that despite regulations, the shepherds do not move their herds often enough. Fortunately for the tundra, the sheep industry is declining rapidly, and is expected to become almost nonexistent in Region VIII. The USFS regional office in Denver reports a substantial drop in the number of sheep

grazing permits being sought and issued. The sheep industry is dying because of an increase in synthetic fibers.

4. Wildlife

a. National Forests provide wildlife habitat for a wide variety of animals, due to the many different vegetative and climatic conditions. Other land uses are not always compatible with wildlife habitat. Some animals, like eagle and beaver, are very sensitive to people pressure. They are easily driven out of their homes by man's activities in the area. Other species, like the bighorn sheep, find it hard to compete successfully with livestock for forage. On the other hand, deer and elk benefit from increased forage production in clearcuts. It is necessary that these conflicts be foreseen and planned for. Until recently, little attention has been paid to the effects of land-use on wildlife habitat.

5. Watershed

a. By the very nature of Forest Service holdings, USFS controls the most important watershed resources in Region VIII, the spruce-fir forests. By far, most of the water flowing out of Region VIII originates as snow in the higher altitudes. The spruce-fir forest is able to store the snow over long periods of time in summer. The snow melts slowly and provides year-round streamflow. The spruce-fir community is largely undeveloped and is not likely to be developed soon, because of the cold climate at that altitude and inaccessability during most of the

year. As mentioned before, there is some timber cutting in the spruce-fir. Clearcutting there should not be allowed to continue, as this changes the composition of the forest due to lack of regeneration. If the character of this land is changed drastically, spring flooding will be a major result. Because of its remote nature, a large percentage of the wilderness and primitive areas being set aside are of this forest type.

6. Recreation

a. Of all the land in the country, the National Forests and National Parks in Region VIII will experience the greatest growth in recreational use in the future. The Sierra Nevadas of California have already experienced this kind of growth. The reasons for this recreation boom are many and varied, but a few major ones will be discussed here. Region VIII has four nationally known National Parks: Yellowstone, Rocky Mountain, Grand Teton, and Glacier. Each of these is surrounded by National Forest land. Literally millions of people visit these four Parks annually. If nothing more than traffic through the National Forests was involved, it would be significant. Aside from that, the National Parks are being filled to capacity, and many visitors are turned away during the summer for lack of facilities. These people naturally seek alternative recreation facilities in the surrounding National Forests.

b. Another factor in the growing recreation demand is increasing urbanization. Salt Lake City and Denver already con-

tribute to this. Phenomenal population growth is occurring along the front range of Colorado and the Wasatch range of Utah. National Forests in both states are feeling the impact of such growth on existing facilities.

c. It is in the realm of outdoor recreation that the multiple-use concept becomes most clouded. The problem is that recreation is incompatible with many other uses. On one hand, recreationists will not tolerate logging and grazing the recreation areas. On the other hand, wildlife will not tolerate the recreation seekers; thus, they find another home. In most recreation areas, recreation is the dominant use; or, in extreme cases, the exclusive use. As long as the public continues to demand highly developed recreation areas, the Forest Service is under great pressure to provide them. It is necessary that the Forest Service locate these areas in places with minimum environmental impact.

d. The effects of increased recreational vehicle use, urbanization, increased leisure time, and better highways (i.e., Interstate 70 tunnel through the Continental Divide) on National Forest land in Region VIII will be the major problem of environmental degradation to be faced by the USFS in the future. People who insist on bringing the comforts of the city to the wilderness inevitably bring the problems of the city also.

e. Most of the major ski areas in Region VIII are located on Forest Service land. By their nature, these ski areas encounter problems with soil erosion and changes in snowmelt patterns due to compaction. Ski area development is progressing

at a faster rate than ever before, especially in areas near Denver and Salt Lake City. Since this development is occurring on land leased from the Forest Service, the USFS is in a position to exercise considerable control in determining location, construction, and maintenance of ski areas in order to minimize environmental damage.

7. Minerals

a. Both National Forest and BLM lands are subject to almost uncontrolled mineral exploitation under the Federal Mining Act of 1872. Fortunately, coal, gas, and oil are not covered by this law. Extraction of these minerals is allowed by permit only. It is the "hard" minerals - gold, silver and uranium - that are covered by the 1872 Mining Act. All USFS land, including wilderness and primitive areas, is open to mining by anyone who files a claim. The mining operations are not subject to Forest Service control. Fortunately, mining activities will eventually be restricted somewhat in wilderness areas. Beginning December 31, 1983 no new mining claims will be issued in wilderness areas. Those who are already operating in these areas will be allowed to continue, however. Mining is the one big loophole in the USFS management system. In effect, miners can dictate management policy in certain areas. There is a need for a major revision in the 1872 Mining Act, to allow the Forest Service and the BLM to manage the public land for the public good without uncontrolled interference from mining interests.

8. Wilderness

a. The Wilderness Preservation Act has had a profound effect on Forest Service land in Region VIII, because there is so much unspoiled land. In Montana alone, about 1.5 million acres of USFS land have been included in the National Wilderness Preservation System by Congress. An additional 420,000 acres are under immediate consideration for inclusion.

b. The Sierra Club presently has an injunction against the Forest Service to halt all development in "roadless areas." These are undeveloped tracts of 5,000 acres or more that are eligible for designation as wilderness. Until the injunction is lifted, these roadless areas are essentially de facto wilderness areas, and must be treated as such by the Forest Service.

9. Multiple-Use Planning Process

a. Unlike the Bureau of Land Management, the Forest Service has no uniform national planning process. Each Forest Supervisor uses the resources most available to him. Most Forests have a Multiple-Use Coordinator, whose job it is to formulate and carry out a land-use planning process. This is a fairly recent development, however. Most Forests are just getting underway with their collection of data. Two different Forests will be described here to give some idea of the variability between Forests and to illustrate some of the things that are taken into account.

1. Arapaho National Forest

a. Arapaho National Forest is located west of

Denver on the eastern slope of the Rockies. The planning process there is based on assigning numerical values to correspond to the suitability of a given plot for a given use. For example, each plot might be evaluated for sightseeing-type recreation in this way:

Unusual, unique, or historical feature.....	15
Aesthetic diversified landscape.....	12
Aesthetic non-diversified landscape.....	9
Non-degraded landscape.....	6
Degraded or unpleasant viewing experience.....	3

When each resource use is evaluated on the zero to 15 point scale, they can be readily compared. Each resource use has approximately the same importance. A particular plot might give these results:

Recreation.....	10
Timber Production.....	4
Forage.....	2
Wildlife.....	8

Such a plot would probably be managed for recreation, with modifications to make it compatible with wildlife. Forage would be disregarded, as would timber, with the possible exception of selective cutting in the campsites to maintain healthy tree growth. The example given here is a simple one. An actual multiple-use plan would break each resource use (timber, recreation, etc.) into more specific uses.

b. Arapaho National Forest has the planning machinery, but how much it is being used is open to question. A more aggressive planning program is found in the Roosevelt National Forest.

2. Roosevelt National Forest

a. The Roosevelt National Forest lies west of Fort Collins, Colorado on the eastern slope of the Rockies. The Roosevelt planning system is based mostly on overlay maps. The Forest is broken into planning units, each of which is analyzed separately as the planning process progresses. Data from the first planning unit is now being collected. A computer is being utilized for topographic data and roadside visibility analysis.

b. It is expected that five to ten years will be required to complete planning for the entire Roosevelt Forest. The important point is that the entire Forest will be planned and it will be done within a reasonable amount of time.

b. Congress has a great deal to say about what uses the land may be put to. Appropriations to the Forest Service are made for each land management function separately. Thus, timber production receives so much, wildlife so much, and recreation so much. In Region VIII, it is commonly felt that too little money is appropriated for recreation facilities, as opposed to timber production. But, after all, timber production brings a return to the general treasury; recreation facilities do not.

c. Also of importance is the fact that Congress does not appropriate any funds for multiple-use planning as described above. The money for this must be taken from existing resource management funds. A reordering of Congressional priorities

must take place if the Forest Service is to plan comprehensively and if it is to carry out the Multiple-Use Act the way it was intended to be carried out.

10. Environmental Impact Statements

a. The Forest Service makes hundreds of decisions each day that have a direct impact on the environment. Obviously, an impact statement cannot be written for each one.

b. The district ranger is usually responsible for writing impact statements. He has regional and national guidelines for determining when one is to be written. Some projects are clearly applicable, and some clearly are not. The projects which are most difficult to assess are those with minor primary effects, but possible major secondary effects.

c. Such a project is a proposed reservoir in the Boulder district of Roosevelt National Forest. The reservoir itself would have rather minor effects on the environment. But the increased water supply to the city of Boulder, Colorado is a significant secondary effect. Boulder is already experiencing phenomenal population growth, as is the entire front range of Colorado. Attempts are being made by county officials to discourage this growth or, at least, to control it. Yet, the district ranger is unsure whether an impact statement on the reservoir will be written or not.

d. Even though an impact statement might not be written for a particular project, the Forest Service writes what is

called an "environmental analysis" of projects or actions of some significance. The Forest Service started writing these about two years ago. Environmental analyses are usually not as extensive as an impact statement, and they are not circulated for comments from other agencies. They are, however, public information, and can be reviewed by anyone who is interested. Things are sometimes uncovered in an environmental analysis that will indicate to the Forest Service a need for an impact statement.

e. The Region VIII EPA office has received an impact statement from the Bitterroot National Forest and several from Black Hills National Forest on their multiple-use planning units. Planning units are much more comprehensive and easy to evaluate than 3-year road construction plans and 5-year timber management plans for an entire Forest. If these planning units were finished, there would be no need for impact statements on road construction and timber management plans. The Region I USFS in Montana has the most aggressive planning program in the Rocky Mountains. Region IV in Utah is somewhat less progressive, and Region II in Colorado and Wyoming seems to be far behind. For the EPA to evaluate environmental impact successfully, multiple-use plans must be comprehensive. This cannot be done on a Forest level. Planning units seem to be the answer.

CHAPTER III. PARK SERVICE IN REGION VIII

1. General

a. The Park Service is responsible for some 5 million acres of land in Region VIII. This is about one-tenth as much as that managed by the Forest Service. Park Service land is divided into three different management types: natural areas, recreation areas, and historical areas. More than half of the Park Service land in Region VIII is in the natural areas, including major National Parks like Yellowstone, Rocky Mountain, Grand Teton, Bryce Canyon, and Glacier. National Historical Areas like the Mesa Verde Indian dwellings in Colorado make up about 4% of the total. Recreation areas comprise the remaining 25% of Park Service land in Region VIII.

b. The management of the National Parks and the historical areas are very similar. The objectives are to preserve the area for the enjoyment of the American people. Unfortunately, preservation and recreation often conflict and are mutually exclusive. The conflict becomes especially critical in a park like Yellowstone, which must accommodate over a million visitors a year.

c. National Recreation Areas are newcomers to the National Park System. Most of the existing National Recreation Areas are federal holdings surrounding large water impoundments. These are more highly developed than National Parks, and are concerned mostly with providing water-based recreation. These

areas serve to take some people-pressure off the nearby National Parks. There is some question as to whether the Park Service should administer National Recreation Areas and Historical Areas. In trying to "be all things to all men," some feel that the Park Service is forgetting its original purpose: preservation of natural ecosystems. Looking at the extensive recreational development in some of the National Parks, this argument seems more than valid.

2. Automobile use in National Parks

a. Since 1915, when the early motorists in Yellowstone were no longer required to chain their cars to logs and turn over the keys to the park superintendent, visitor activities in the parks have been geared to the automobile. In fact, a great many visitors today never leave their cars. Traffic congestion has become a major problem in Yellowstone and Rocky Mountain National Parks. Mass transportation has been proposed; but, so far, park superintendents have been reluctant to ask people to leave their cars behind. Yellowstone has bus tours, but they are strictly voluntary. Cars are still allowed to travel any and all park roads. Rocky Mountain National Park will soon institute bus tours also.

b. Actually, the Park Service is encouraging the use of automobiles. For example, at Yellowstone and Grand Teton Parks, the Park Service has a network of low-powered radio transmitters

which beam a running commentary into the visitors' cars through their AM radio. This is plainly an open invitation to see the Park from a car.

c. Yellowstone has 300 miles of roads, with a new section dedicated this summer. Although not as aggressive as that of the Forest Service, the road building program of the Park Service is an ongoing process. Yellowstone even has a rent-a-car business within the Park boundaries. The Park Service has unquestionably accepted the automobile as the only viable means of park transportation. Several participants at the Second World Conference on National Parks, held this summer at Yellowstone, contend that people can and must leave their cars outside the Park if the National Parks are to retain any semblance of unspoiled wilderness. The Conservation Foundation proposes a total ban on cars in the National Parks.

d. The affluent society has brought down upon the National Parks a rash of trailers, campers, televisions, air conditioners, and other devices to make the "wilderness experience" more comfortable. To provide for these homes on wheels, the Park Service is installing hookups for water and electricity and is extensively landscaping the campsites. Thus, in and around the developed campsites, preservation of the natural environment is forfeited. The crowding and congestion in these campsites is a far cry from the wilderness experience that most visitors seek. In Yellowstone, the major campgrounds are usually filled

to capacity by noon. To top off this kind of wilderness degradation, the Park Service allows motorboats on Yellowstone and Lewis Lakes in Yellowstone Park, and on Phelps, Jenny, and Jackson Lakes in Grand Teton National Park.

3. Recreational Use vs. Wilderness Preservation

a. Clearly, there is a conflict between recreational use and wilderness preservation. This conflict was the major topic of discussion at the Second World Conference on National Parks. The conference was attended by more than 1,000 participants from 102 nations, and received extensive press coverage in Region VIII.

b. Many of the delegates, especially those from developing African countries, expressed concern that the true purpose of parks is being lost worldwide by those who oversell tourism benefits. It appears that the United States is a leader in this respect. There was general agreement at the conference that National Parks must be nature preserves, and that recreational opportunities should be provided by the states or private concerns.

c. At the same time, George Hartzog, U.S. Park Service Director, said in an interview that construction of such facilities as "motor nature trails" for autos is still a valid park use. One might question just how much "nature" is seen from a speeding automobile. Nathaniel Reed, Assistant Secretary of Interior for Fish, Wildlife and Parks said he feared that a

de-emphasis of recreation would threaten the "constituency" that has developed in the United States for parks. This seems to be getting closer to the question at hand. Evidently, the Park Service has adopted a policy that assumes that Americans, in order to fully enjoy and preserve the remaining wilderness areas, are unwilling to leave their cars, campers, motorboats, restaurants and all the rest behind when they enter a National Park.

d. Private concessions in the Parks were also criticized this summer at the Second World Conference on National Parks. Yellowstone and Grand Teton are undoubtedly the most commercialized Parks in Region VIII. Accomodations in these two Parks include hotels, cabins, restaurants, gas stations, grocery stores, photo shops, rent-a-cars, and a trailer village.

e. Backpacking has become so popular in Region VIII that several Parks have had to start using a Backcountry Permit System to prevent overcrowding on the trails and in the primitive campsites. Rocky Mountain National Park was the first to use this system, and Glacier followed soon after. Starting next summer, all Parks in Region VIII will use the permit system. The backcountry also presents a problem with sanitation. This year Rocky Mountain Park is installing toilets in the backcountry which can be lifted out by helicopter and replaced when they become full. Granted, the helicopters do not enhance the "wilderness experience," but neither does pollution of mountain streams by human wastes.

4. Forest Fire Control

a. A serious deviation from the preservation of natural conditions is occurring in Region VIII. It is caused by the seemingly innocuous forest fire control program. It has been shown that certain fire-adapted species (i.e., aspen) of flora and fauna are disappearing from Grand Teton National Park. This is because all fires, both natural and man-caused, are being extinguished immediately. This has been the procedure in National Parks for over 40 years. Only now are the results beginning to become evident. In nature, forest fires kept certain areas at a sub-climax vegetation type, and the wildlife species there were adapted to the vegetation. In the absence of fire, the vegetation is changing and so is the wildlife. In addition, the absence of fire is causing an unnatural buildup of flammable material on the forest floor. Thus, when a fire does get started, it burns hotter and faster, and is more likely to get out of control than the natural fires did.

b. King's Canyon National Park in California recognized this undesirable situation, and has adopted a "let burn" policy to restore the Park to a natural situation. Man-caused fires are still extinguished, but lightning-caused fires are allowed to burn, so long as they do not endanger human lives, permanent Park facilities, or land outside the Park. In Region VIII, officials at Grand Teton are attempting to initiate the "let burn" policy. They are in the process of writing an environmen-

tal impact statement on the adoption of such a policy for the Park.

5. Environmental Problems: Flouride

a. An outstanding case of infringement on a National Park by forces beyond the control of the Park Service is taking place at Glacier National Park. The source of the problem is an Anaconda aluminum processing plant in Columbia Falls, Montana. Airborne flouride from the plant is causing excessive flouride concentrations in flora and fauna, and visible damage to several tree species in Glacier National Park and Flathead National Forest is present. Studies have been conducted by the EPA, the Forest Service, and the University of Montana. All three studies agree that Anaconda's flouride pollution is causing both immediate and long-range damage to the wilderness environment in Glacier National Park, six miles from the aluminum plant.

b. Since the Anaconda plant opened in 1955, it has steadily increased its flouride emissions to a peak of 7,600 pounds per day in 1970. By installing scrubbers and limiting production, Anaconda brought flouride emission down to 2,500 pounds per day in the summer of 1971.⁵ This reduction has not been accompanied by a similar reduction in flouride concentration

⁵Clinton E. Carlson and Jerald E. Dewey, Environmental Pollution in Flathead National Forest and Glacier National Park (U. S. Forest Service, October 1971); p. 4.

in the flora of the Park, however. It is believed that a threshold for flouride absorption by plants exists, and that the emission reductions have failed to bring the flouride level below that threshold. The Forest Service study indicates that even if the aluminum plant reduced flouride emissions to the State of Montana standard of 864 pounds per day, flourides would continue to be accumulated by vegetation in Glacier Park. In the fall of 1970, chemical analysis of vegetation in the Park disclosed that vegetation on 73 percent of the total 173 square miles in the Park had accumulated excessive concentrations of flouride.⁶

c. Unlike more common air pollutants, flouride is absorbed and accumulated by plant tissues. It is translocated from leaves or needles to other parts of the plant. This includes translocation to the reproductive structures. Conifer pollen samples taken from the southwest portion of the Park showed twice the average normal flouride concentrations. Studies are underway to determine the effect this is having on regeneration.⁷ Loss of reproduction could have a slow but detrimental effect on the Park's wildland forests.

d. When exposed plants are eaten by wildlife, the flouride is passed on and accumulates in the bone tissues. The average flouride concentration in the bones of snowshoe hares found in

⁶C.C. Gordon, et. al., 1970 Glacier National Park Study (University of Montana, 1972); p. IV.

⁷Ibid. p. 25.

the Park was over eight times the normal. Flouride is concentrated progressively in the food chain. On the west face of Teakettle Mountain (in Flathead National Forest), analysis of 1968 lodgepole pine needles revealed an average flouride concentration of 305 ppm., approximately nine times the average found in control areas.⁸ Bone samples of deer and ground squirrel collected in the area show visible osteoflourosis, or bone deformation.

e. The Anaconda plant emits both particulate and gaseous flouride. The University of Montana study concluded that excessive flouride accumulation in foliage of Glacier Park comes from the gaseous flouride, which will not be reduced in the future by installation of pollution abatement equipment designed to remove particulates.

f. Because of the cumulative nature of the flouride in the ecosystem, the Forest Service study suggested that the only ways to stop the environmental damage to the Park are (1) installation of pollution abatement equipment to limit flouride emission to 0.0 pounds per day, which may well be impossible, or (2) closure of the plant.

g. Neither the Park Service nor the Forest Service is ready to take action. In fact, the Forest Service study suggested that the Montana legal limit of 864 pounds per day be

⁸ Ibid. p. 15.

supported, that grazing and farming in the area be restricted, and that the damage to the Park and the National Forest be monitored. This is rather a weak and perplexing position to take, in view of the visible and potential damage that is taking place in an area which was set aside for perpetual preservation.

h. The EPA has an interim report which outlines the findings of the Forest Service and University of Montana studies, and includes the results of a study carried out by the National Air Pollution Control Administration (NAPCA). The NAPCA report provides a bulk of information about meteorological and air quality data. In contrast to the Forest Service and the University of Montana, the EPA interim report includes no recommendations whatsoever. Hopefully, the final report, to be issued soon, will include concrete recommendations to the national EPA. Though EPA has legal power to set flouride standards, it has not done so. Any standard for flouride must come from the Washington Headquarters. Very few people in the Region VIII EPA Headquarters are aware of the Glacier Park situation or are concerned about flouride pollution. If the regional office isn't concerned, the national headquarters can hardly be expected to take an interest in the problem. The EPA, which is so often criticized for interfering with the work of other Federal agencies, has an opportunity and an obligation to assist the Park Service in protecting its wildlands from outside sources of degradation. If Glacier National Park is of "national signifi-

cance," as Park Service guidelines state, the destruction of its vegetation by flourides and the elimination of wildlife should be of national concern.

Recommendations

The Region VIII EPA should:

1. Explore the extent and the implications of flouride pollution, and formulate guidelines for national promulgation under Section 112 of the Clean Air Act.
2. Influence other Regions to submit statements on the extent of the flouride problem in their regions and make recommendations for consideration by the national EPA Headquarters.

CHAPTER IV. SOIL CONSERVATION SERVICE IN REGION VIII

1. General

a. The Soil Conservation Service has always played an important part in encouraging the wise use of land, especially through the voluntary soil conservation districts. The SCS has no power to enforce regulations. Land-use improvements are brought about by cooperation, education, and technical assistance to landowners.

b. SCS soil maps and interpretations provide valuable tools for land-use planning. Much of the rural land in Region VIII has yet to be surveyed by the Soil Conservation Service. Many soil surveys are in the process of being completed, but the demand for them far outstrips the financial and manpower resources given the SCS to do this work. The importance of this information is illustrated by the fact that many counties and municipalities are willing to share the costs of soil surveys in order to get them done more quickly.

c. Two fairly new SCS programs will be discussed in detail because of their importance in Region VIII, and because they involve a comprehensive planning approach to land-use problems. These two programs are called Resource Conservation and Development Projects and the Great Plains Program.

2. Resource Conservation and Development Projects

a. Resource Conservation and Development (RC&D) is far more

than an SCS program. It involves many agencies: SCS, Agricultural Stabilization and Conservation Service, State Departments of Agriculture, county governments, local conservation districts, and any other agencies that might be called upon to help (HEW, HUD, etc.). The unusual thing about RC&D projects is that they are initiated by local people. The sponsoring body can be a county, conservation district, town, civic club, church, chamber of commerce, or a similar group. The local group petitions the U. S. Department of Agriculture for designation as an RC&D project. One RC&D usually involves several counties.

b. Once an RC&D project is approved, it is eligible for federal money and assistance for planning. It is no coincidence that land areas in RC&D projects are better inventoried, better documented, and have more base planning information than areas outside the projects.

c. Each project has somewhat different objectives, according to the needs of the people in the area. There are some basic goals common to all RC&D projects, however. Many of them have to do with economic, social, and educational improvements. The following objectives seem to stand out in the context of this land-use report:

1. Provide soil and water information to other planning agencies on such resource uses as farming, ranching, recreation, wildlife habitat, housing, industry, and transportation.

2. Accelerate soil surveys and interpretations where they are needed to complement project plans.

3. Reduce pollution of air and water.

4. Speed-up conservation work on individual farms, ranches, and other private holdings and on public land.

5. Make needed adjustments in land-use by converting poorly suited cropland to more beneficial uses; i.e., grass, trees, wildlife habitat, and recreation.

d. The Soil Conservation Service provides funds and technical help for planning. The funds for carrying out the plans are found in local sources or in existing government programs (the ASCS Rural Environmental Assistance Program). The SCS simply tries to coordinate and facilitate these financial sources. In short, the thrust of the Resource Conservation and Development Program is not in any additional funds for specific projects. Its strength lies instead in promoting multi-county planning and providing logistic assistance to carry out that plan.

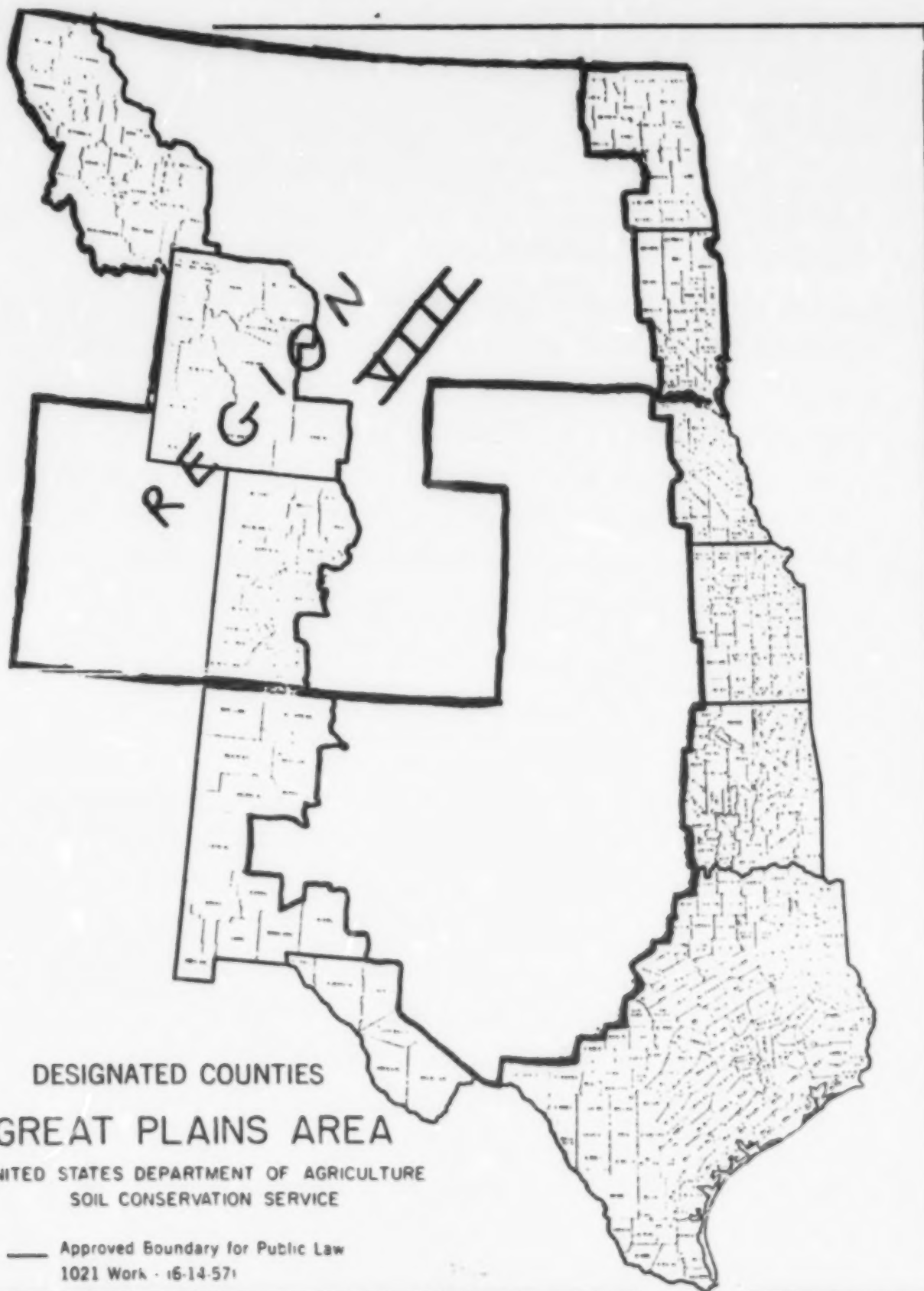
e. There are 15 RC&D projects approved in Region VIII. They encompass a total of approximately 90 million acres. About a third of this is public land.

3. The Great Plains Program

a. The Great Plains Program of the Soil Conservation Service is very similar to RC&D in its promotion of land planning. The difference is that the Great Plains Program deals with individual landowners instead of multi-county districts. The

landowner receives technical assistance in formulating a land-suitability study of his property. The owner and the soil conservationist subsequently agree on a plan to better utilize the land resource. Normally, the plan is carried out over a number of years, to conform to the owner's financial capabilities. The SCS conservationist helps arrange for financial and technical assistance through other government programs to facilitate completion of the needed improvements and changes.

b. There are hundreds of government programs to help farmers and ranchers, from price supports to Set-Aside payments, to cost-sharing for building a fence. Yet, these all seem secondary to the more important task of proper land utilization. This is the thrust of the new SCS programs. If landowners can be provided with basic planning information and can be persuaded to use it in a plan of action, both the landowner and the environment will benefit.



DESIGNATED COUNTIES

GREAT PLAINS AREA

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

— Approved Boundary for Public Law
1021 Work - (6-14-57)

CHAPTER V. AGRICULTURAL STABILIZATION AND
CONSERVATION SERVICE IN REGION VIII

1. General

The Agricultural Stabilization and Conservation Service is faced with the task of bringing agricultural production in line with demand (or vice-versa) and of trying to insure that farmers have adequate income to continue farming. ASCS has its greatest impact on Region VIII in the highly agricultural states of North and South Dakota. Two ASCS programs will be discussed in this land-use study: The Rural Environmental Assistance Program and the Set-aside Program.

2. The Rural Environmental Assistance Program

a. The Rural Environmental Assistance Program (REAP) is a cost-sharing program for farmers and ranchers who do conservation work on their lands. Top priority is given to the following practice

- Establishing permanent vegetative cover
- Planting trees and shrubs
- Establishing sod waterways
- Permanent vegetative cover on problem areas
- Water impoundment reservoirs
- Timber stand improvement
- Diversion terraces, ditches, or dikes
- Erosion control dams, pits, or ponds

The first four practices nearly always result in better environmental protection. The last four can also help the environment, but have

the potential of doing more harm than good if carried out in a sporadic fashion. This is the main weakness of the REAP program. One need not have a land-use plan to qualify. When the REAP program is used to fund projects planned for in the Resource Conservation and Development projects or in the Great Plains program of SCS, it becomes an integral part of a well-planned program which should include environmental protection. When REAP is used to fund well-intentioned but uncoordinated projects labeled "conservation measures," the environment will sometimes suffer.

b. There is a need for comprehensive land-use planning for all REAP cost-share grants. Either the ASCS should undertake such a program, or REAP benefits should be contingent upon participation in the Great Plains program or other planning program.

3. The Set-aside Program

a. The ASCS Set-aside program is the direct descendant of the old Soil Bank program. The difference is rather striking, though, especially in its effect on the environment.

b. Under the Soil Bank program, ASCS contracted with farmers to remove land from production of wheat and feed grains for a ten-year period. The land was planted to grass or alfalfa, and these could not be harvested. Summer fallowing was allowed only as a preparation for establishing permanent vegetation cover.

c. The practice of summer fallowing involves plowing the earth and planting nothing so that water can be stored over a season without loss from transpiration of plants. Thus, more water is available for crops the following season.

d. Under the new Set-aside program, ASCS still contracts with farmers to remove cropland from production, but the contract is for only one year. This change was made so that farm production could be adjusted more quickly in response to market demands. Since the retirement contract is for one year, there is no requirement that permanent vegetative cover be established. Most of the Set-Aside acres are in permanent fallow, in anticipation of a year when they will be called back into production.

e. The Wildlife Management Institute has pointed out that the Set-Aside program shows little evidence of public-benefiting conservation uses on the retired acreage. Surveys in Minnesota and North and South Dakota in 1971 indicated that the majority of Set-Aside acres were without protective cover. Losses were occurring from topsoil erosion. At least 75 percent of the Set-Aside acreage was considered worthless for wildlife. The Institute suggested minor changes in the program that would require cover crops on retired lands and change the one-year contract period to at least five years.⁹ About 9.4 million acres in Region VIII were in the Set-Aside program in 1971, and an increase is expected for 1972.

f. The Dakotas have a severe soil loss problem as it is. Over half the land in South Dakota is losing more than 5 tons/acre/ year, the maximum acceptable soil loss. The Great Plains of the Dakotas are marginal cropland to begin with. Keeping

⁹Charles E. Randall, "Set Aside Program," Journal of Forestry, (September 1972), p. 571.

them plowed up in fallow year-after-year encourages an already undesirable situation. From a land-capability standpoint, much of the dry cultivated land in Region VIII should either be converted to permanent vegetation or brought under irrigation. The Set-Aside Program, in its present form, discourages establishment of permanent vegetation and prohibits cropping on the barren soil.

g. The Set-Aside Program was authorized by Congress two years ago. It will be considered for renewal next year. The adverse environmental effects of the program should be a major consideration in the renewal or revision of the program.

PART III. REGION VIII STATES

INTRODUCTION

Six states constitute Region VIII: Colorado, Montana, Wyoming, Utah, South Dakota and North Dakota. Though these states are experiencing many common problems, in most cases their methods of dealing with their problems are unique.

In differing degrees, each state except North Dakota must tolerate a peculiar federal-state relationship, because of the vast amounts of federal land within their territorial boundaries. Consequently, the six Region VIII states, with the exception of North Dakota, often find themselves to be the tail of the dog; that is, land-use problems are frequently caused by federal land policies, and the solution of these problems often is dependent on such federal policies.

Because of this situation, one general recommendation can be made. The five states that have this unique relationship to the Federal government should attempt to impact federal decision-making to a greater degree and shape federal land policies to the state environment and land policy requirements.

The six chapters that follow highlight state land-use and environmental problems and define their causes.

CHAPTER I. COLORADO

1. General

a. Colorado is facing environmental and social problems of tremendous magnitude. Any hope of a Colorado of tomorrow retaining any of the qualities or values of the Colorado of today is being crushed under the burden of ill-placed, unplanned population growth, development, and subsequent environmental degradation.

b. However, state leaders have recognized this threat and are attempting to shape the state's future otherwise. Growth is being discouraged, and concerned citizens are resisting increased or new development that does not properly protect or maintain environmental quality. State government is seeking a means to ensure orderly growth based on environmentally-sound principles; and, recognizing the multitude of problems the state faces, or that already exist, it has initiated an effort to establish a land-use management plan for the state.

c. There are 66,718,000 acres of Colorado land - 3.5 percent of the total land area in the United States. Approximately 27.7 million acres are in public ownership, unavoidably involving Federal and State governmental agencies in land-use decisions and land-use duties. Public and private land is being developed for recreation, housing, and resource extraction at a rapid pace and on a far-reaching scale.

2. Population

a. During the 1960s, Colorado's population increased by

25.8 percent, from 1,753,947 to 2,207,259; an annual increase of 2.3 percent, or a population doubling every 30.1 years.¹ The Colorado Environmental Commission, in a March 1972 report titled "Colorado: Options for the Future," estimates that the state can expect a population of 4.4 million people in the year 2000.

b. Although much of this increase is due to expected, natural population growth, 48.6 percent of the increase was due to in-migration from other states.² Because of an attractive environment, job availability, and the recreational opportunities here available, this trend is expected to continue until the state becomes unattractive, at which time in-migration should decrease.

3. Urbanization

a. During the 1972 session of the Colorado legislature, a bill was enacted directing the state to do nothing that would encourage growth along the Front Range of the Rocky Mountains. This legislation was simple recognition of the consequences of unplanned, unrestricted, and disorganized growth. How severe the situation has become in some areas is indicated by the City of Boulder's eight-month moratorium on foothill development, declared earlier this year.

b. From 1940 to 1970, the Denver Standard Metro Statistical Area tripled in population, from 445,000 to 1,228,000. The Regional Transportation District, which has issued a report on

¹U. S. Department of Commerce, Bureau of the Census, 1970 Census of Population, United States, Advance Report, February 1971.

²Colorado Environmental Commission, Colorado: Options for the Future, Final Report (March 1972); p.7.

TABLE 1 - DENVER REGIONAL POPULATION

	Denver SMSA	RTD Study Area*	Percent Change within preceding decade	
			U.S.	RTD Study Area
1940	445,000	552,000	1.48	3.06
1950	612,000	721,000	1.86	4.62
1960	929,000	1,054,000	1.37	3.36
1970	1,228,000	1,408,000	1.07	2.18
1980	1,475,000	1,715,000	1.19	2.27
1990	1,780,000	2,105,000	1.02	2.16
2000	2,125,000	2,560,000		

*Includes Denver SMSA counties (Adams, Arapahoe, Boulder, Denver and Jefferson) plus Douglas and a portion of Weld County.

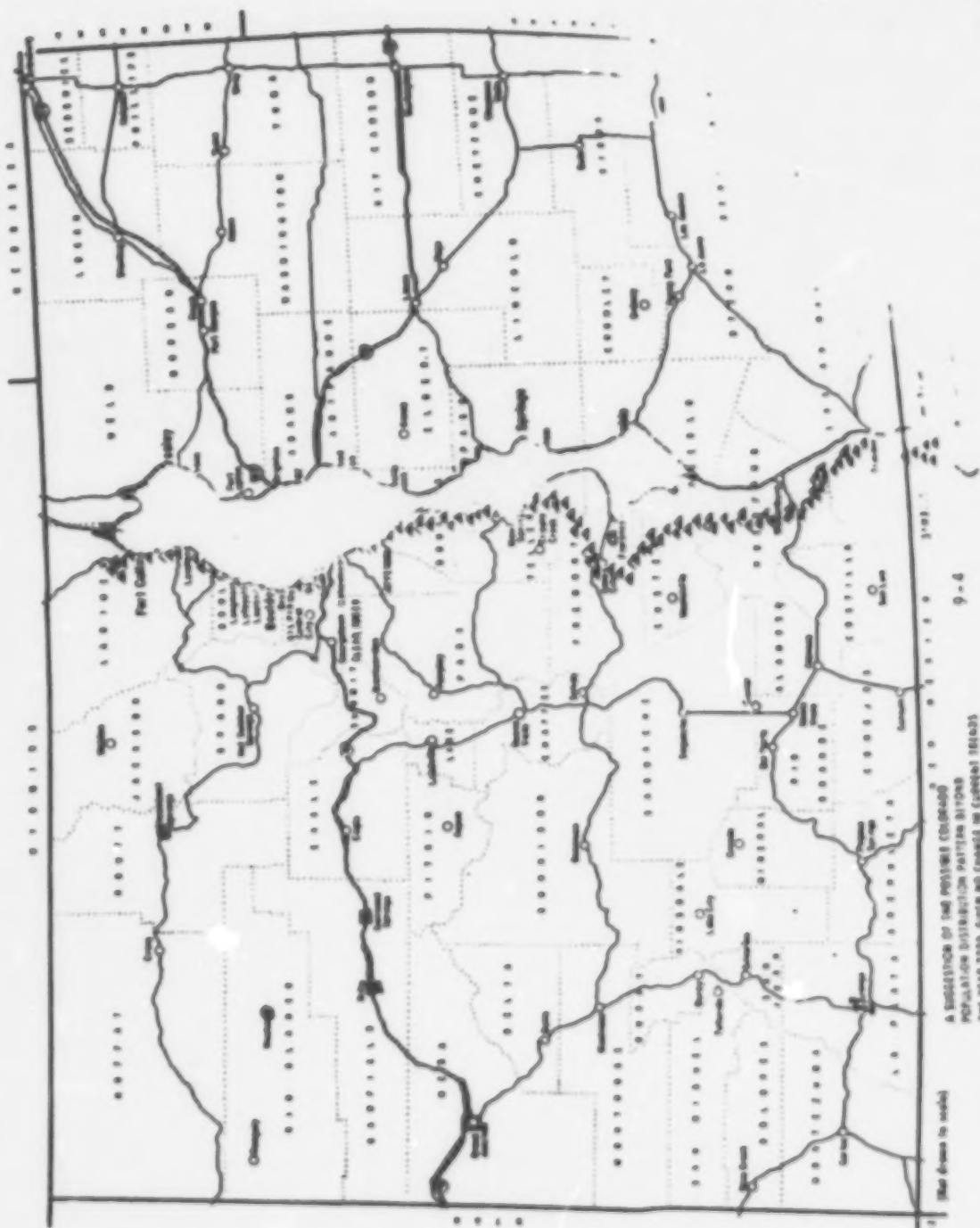
Sources: The Colorado Investor, U. S. Commerce Department, Bureau of the Census, Regional Transportation District Projections.

TABLE 2 - COLORADO CENSUS FROM 1860 to 1970

Year	State Population	Percent Change from preceding census	Percent of Total	
			Urban	Rural
1860	34,277*		13.9	86.1
1870	39,864	16.3	11.9	88.1
1880	194,327	387.5	31.4	68.6
1890	413,249	112.7	45.0	55.0
1900	539,700	30.6	48.3	51.7
1910	799,024	48.0	50.3	49.7
1920	939,629	17.6	48.2	51.8
1930	1,035,791	10.2	50.2	49.8
1940	1,123,296	8.4	52.6	47.4
1950	1,325,089	18.0	57.4	42.6
1960	1,753,947	32.4	62.1	37.9
1970	2,207,259	25.8	78.5	21.5

* Population of area organized in 1861 as Colorado Territory from parts of Kansas, Nebraska, New Mexico and Utah Territories.

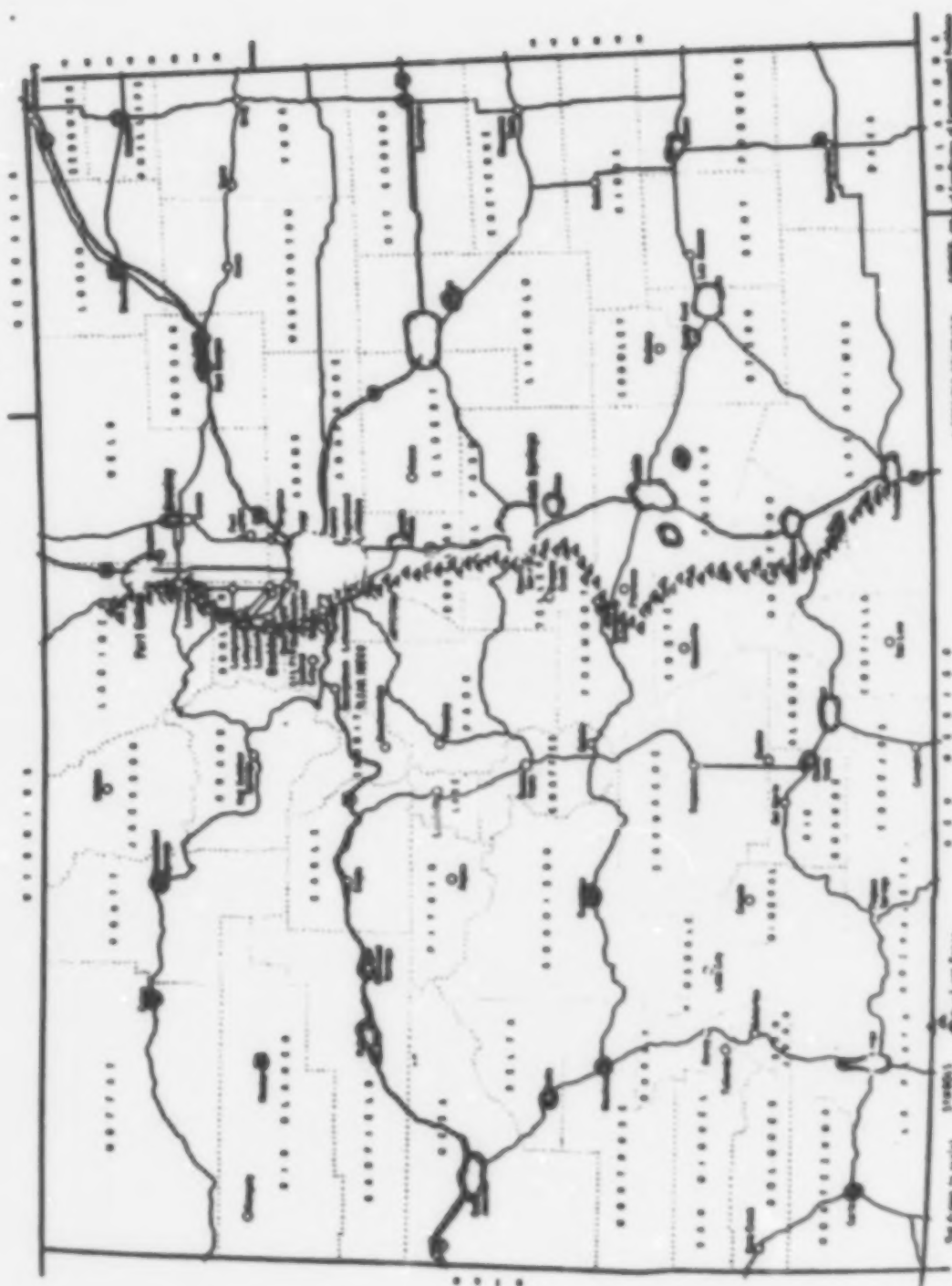
Source: U.S. Commerce Department, Bureau of the Census, The Colorado Investor.



A DISTRICT OF THE REPUBLIC OF FRANCE
 POPULATION DISTRIBUTION BY DISTRICT
 THE YEAR 1936. SOURCE: NO. 10000 IN CENSUS OF 1936

(See France to right)

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the Denver metropolitan area, attributes three primary reasons for this growth: 1) a birth rate 5 to 10 percent higher than the national average; 2) a death rate 10 to 15 percent below the national average; and, 3) a high rate of in-migration.³ The latter reason is the most significant. The RTD estimates that half of the Denver area's population growth over the last 20 years was the result of in-migration encouraged by the highly desirable climate and environment of the region, relative to older urban areas; the availability of high-quality jobs; and, the migration from rural areas in the Rockies and the Northern Plains to urban Denver.⁴

c. Of Colorado's present population, 78.5 percent of the people live in urban areas, primarily along the Front Range of the Rocky Mountains. The Front Range, from Ft. Collins to Pueblo, has been increasing in population density, and housing development is now spreading to the foothills west of this "strip city." More and more water has been diverted from the West Slope to the Front Range to accommodate this growth. In fact, such water diversion may well be a determinant of growth in semi-arid Colorado. The Colorado Rural Development Commission, in a recent report on Front Range growth, commented of the Denver Water Board: "Its farsighted, aggressive operation, seeking to secure water for its metropolitan

³Editors, The Colorado Investor, Land Use In Colorado: Special Report (May, 1972); p. 3-2.

⁴Ibid., p. 3-2.

areas, has perhaps had more to do with the size and shape and configuration of the metropolitan area than any planning or zoning board." Moreover, such water management may also determine statewide growth patterns. Population and business in 32 of Colorado's 63 counties has declined, and many of these counties are located on the West Slope where most of Denver's water originates.

d. The Denver Water Board recently presented to Denver voters a "mixed package deal." Denverites were asked to approve a \$200 million bond issue to finance water supply projects and needed treatment facilities. Eighty percent of the water supply would be used to expand service to a 1,000 square mile area surrounding Denver, based on the Denver Water Board's plans to support a 500 percent population growth around Denver over the next forty years. Although most citizens supported raising the money for the treatment facilities, the bond issue was defeated because of the proposal for new water supply projects. Opponents pointed out that the net result of approval of the bond issue would be to "promote uncontrolled subdivisions, urban sprawl, and increased congestion and pollution." With present water supply sufficient for Denver's needs until 1990, this proposal by the Denver Water Board is ample evidence of the "aggressive" water management pursued by the Denver Water Board even in recognition of the consequences on growth.

e. There are other forces pointing to increased urbanization of the Front Range and the Denver area. The region's basic crops, timber, meat and dairy products, are projected to increase by only

one half, while services and manufacturing are growing, encouraging the explosions of population into typical metropolitan patterns about Denver.⁵ Kenneth Olson and George Nez, in a report titled "Land Use Planning and Economic-Environmental Considerations"⁶ state that ". . . mobile homes, and building components are projected to grow some 100 percent, electronic equipment some 120 percent, motels and advertising activities some 90 percent, sporting goods some 90 percent. . . These are some of the Region's 'urban forming' industries. On the other hand, booms in recreation, retirement, research and education will sprout new outlying settlements and networks of services."⁷

f. Of course, the urbanization of the Front Range has a direct relationship to the pollution problems facing the Denver area. As population has increased, and the suburbs expanded, air pollution in Denver, resulting mainly from automobile emissions, has correspondingly worsened.

g. The Regional Transportation District has projected that 60 percent of Colorado's population in the year 2000, or 2.5 million, will be living in the Denver region. The Colorado Environmental

⁵Kenneth C. Olson and George Nez, "Land Use Planning and Economic-Environmental Considerations," State Planning Issues, by the Council of State Planning Agencies and the Council of State Governments, March 1972, p. 16.

⁶Ibid.

⁷Ibid.

Commission shares this estimate, and adds that by 2000, 85 to 90 percent of the projected state population of 4.4 million will be living in 13 counties along the Front Range. Based on the above projections, the RTD estimates that 60,000 acres of land will be needed to accommodate the "population and employment growth" in the Denver region, excluding new parks, airports and major highway projects.

h. Because of this projected accelerated urbanization, Colorado desperately needs, at least, some guidelines to make more orderly the growth that is occurring along the Front Range. This is emphasized by a report issued in 1969 by the Colorado State Planning Office, titled "Colorado Front Range Corridor." The report concerned urbanization along the Front Range from Fort Collins to Pueblo. The State Planning Office found three basic results of the Front Range urbanization: 1) a conglomerate of land uses; 2) a lack of open space; and 3) inadequate transportation and coordination and complexity of communities.

i. These effects are much more evident today. The urban sprawl is creating overlapping service authorities as local governments run together. Chaos is emerging as a result of housing developments straddling the boundaries of adjacent jurisdictions. Incorporated suburbs encourage development and the location of new industry within their city boundaries; and prospective residents and industries or businesses are glad to leave congested Denver for the temporarily uncongested suburbs. Housing developers and subdividers herald the advantages and values of "rural living,"

but new suburbanites soon find a lack of services comparable with the city's (and the suburbs find themselves hard-put to provide them); and, before long, they realize that the rural setting is very temporary indeed as bulldozers begin clearing adjoining sections of land for new subdivisions.

j. Transportation systems and water management have a direct influence on the nature and patterns of growth. The Colorado Rural Development Commission has recommended that the General Assembly pronounce a water policy for the state. The Commission declared that the legislature should "take action declaring that a state of emergency exists, and, therefore, declare a moratorium on water diversion for a limited period of time." This is one means of controlling the Front Range urbanization, as mentioned earlier.

k. On the other hand, the Regional Transportation District has, after extensive study, adopted the approach of Ian McHarg, viewing transportation from an ecological perspective, as "within the total environmental planning framework as a critical factor in determining life style and land use."⁸ Using this approach, the RTD developed four basic criteria: economic, social, environmental, and ecological. Based on these criteria, five alternative growth patterns were defined: dispersal, reinforce central Denver, reinforce metro centers, reinforce regional centers and new towns. The RTD is now in the process of attempting to develop a "multi-faceted transportation system" that would encourage the three latter growth patterns. These three alternatives - reinforce metro centers

⁸Land Use in Colorado: Special Report, op. cit. (ref.3), p. 3-13.

reinforce regional centers and new towns - seem to be the most logical means to disperse growth while retaining effective community services and encouraging development that is both orderly and planned.

1. The Colorado General Assembly has also taken action that seeks to control growth and that will influence the nature and impact of the seemingly steamrolling urbanization of the Front Range. As mentioned earlier, a bill was passed during the 1972 legislative session declaring a no-growth policy along the Front Range. Also enacted in 1972 was a bill that authorizes local governments to adopt resolutions or ordinances that provide for planned unit development. Another bill, SB 35, requires subdevelope to prove that they, among other things, have the rights to enough water for potable supply and sewage. This legislation will be discussed in greater detail later in this chapter. Still another, HB 1042, regulates domestic water wells pumping 15 gallons per minute or less. Together, these bills provide valuable controls over development in semi-arid Colorado where all water is presently claimed: subdividers must prove they have rights to water, and land owners cannot drill small domestic wells if the State Engineer can prove they will damage the senior water rights of others. Of course, in the latter instance, the burden of proof is ill-placed; but the State Engineer has claimed that proof presents no problem. In short, then, land will not be developed or bought if buyers of such land find water unavailable.

m. Thus, efforts are being made to check the unruly urbanization of the Front Range in Colorado. So far, the majority of

these efforts have emphasized study of the effects of urbanization upon the environment and society, and have attempted to define growth patterns. Ostensibly, this large-scale and multifaceted research will augment the investigations of the Colorado Land Use Commission and eventually lead to the promulgation and implementation of land-use controls directly shaping future urbanization. Most certainly, the time has come to direct attention towards this goal so that these controls may, in fact, be implemented in the near future.

4. Recreation - Tourism

a. Foremost among recreational issues affecting land-use in Colorado is recreational or resort development, associated "second-home" development, and the Olympics.

b. Obviously, the mountains of Colorado constitute a prime recreational area. Exploitation of the mountain sides for resort development and recreation, i.e., ski runs, has occurred for years and is continuing. "Second-home" development in the mountains is expanding, suburbs are extending into rural Colorado, and the suburbanites are building vacation-type homes in relatively isolated urban areas.

c. A contributing factor to such recreational and housing development in the mountains has been increased and expanded highway construction into the mountains. Interstate 70 will be continued through the Continental Divide to the West Slope during the next year, increasing the ability of Front Range residents to travel to mountain recreational sites. This highway construction

will undoubtedly be accompanied by new "second-home," or mountain subdivision, construction and recreational development. With such development, increased supportive, pollution control facilities will be needed, services will expand, increasing the area's capacity for expansion.

d. All this development has been uncontrolled. Many developers of Colorado land have paid little if any attention to the land's capacity for development and the potential for creation of major pollution problems. For example, in northern Colorado Rocky Mountain National Park is a mountain subdivision called Poudre Springs. The extent of the developer's responsibility included bulldozing roads and selling the lots. It is up to the new owners to find a water supply, sewage systems, and to provide fire protection--all three of which are nearly impossible to do. (Unfortunately, SB 35, regulating subdivision development, applies only to future subdivisions and not to those already plotted.) It has become obvious already that ground water is at a premium. A law suit is underway because a new well depleted the water supply from an existing well. Surface water is obviously minimal, the only source being a shallow creek called the Little South Poudre. Septic systems are incompatible with the shallow soils on the mountainsides and the high-clay soils in the meadow. No consideration was given to fire danger in laying out the plots. No fuelbreaks were provided, there are places where only one road provides access out of the area, and the road construction is such that fire equipment will be hard-pressed to reach a fire

in time. Forest fires are an everyday fact of life in this region, and mountain subdivisions which don't make provision for fires are asking for ultimate loss of lives and property. The real shame of this situation is that the Colorado Land Use Commission has the authority to stop development of this type that is dangerous to human health; yet, to this time, the LUC has not used this authority.

e. Most mountain development has occurred near recreational facilities, in areas of weak governmental control; that is, in small communities unable to control growth of such magnitude. Local government is often simply overwhelmed by "big city" developers and the scope of their plans. The counties, initially delighted with the promise of new revenues, are shortsighted; soon, they find themselves unable to provide services demanded.

f. Recreational vehicles pose significant problems in the mountains. Four-wheel drive vehicles and motorcycles are being increasingly used in "alpine areas away from designated trails and roads,"⁹ damaging the natural ecology and encouraging erosion of the mountainside.

g. Ski-run development causes extremely significant land-use problems in the mountains of Colorado. Ski-runs carve out a mountainside and cause significant erosion during off-season. Land is limited, in effect, to a single-use after such recreational development is initiated.

⁹Colorado: Options for the Future, op. cit. (ref. 2), p. 26.

h. National Parks in Colorado are prime recreational areas. Out-of-state visitors swell the influx of people into Rocky Mountain National Park so much that, during the summer, people are turned away as early as 11:00 a.m. Rocky Mountain National Park supervisors are beginning to emulate the activities of Yellowstone in Wyoming; bus tours will soon be initiated, and officials are studying the feasibility of requiring sightseers to park their cars in several large parking areas and take the bus tour. Backpackers are being restricted to a certain number because of the severity of the congestion. Park officials are initiating a study to determine how congestion can best be controlled.

i. Although Colorado voters have denied state funds for the staging of the 1976 Winter Olympic Games in Colorado and Denver voters have denied city funds, private interests are still attempting to retain the Games. The Olympics present a vast potential for environmental degradation and will definitely impact land-use if held. Recreational facilities will be expanded, or new ones constructed, encouraging expanded tourism and the development that accompanies it. The Colorado Land Use Commission has the authority to assist counties in planning for the 1976 sporting events, or to assume control where the counties are unable to accomplish such planning themselves; but this authority has not yet been exercised, and it is questionable if it ever will be.

j. Recreational development certainly impacts on surrounding growth. Local governments have traditionally encouraged this

growth and the increased revenues from expanded tourism. State regulation, which recognizes this growth process, is urgently needed. As recreational development occurs, surrounding land then becomes desirable for "second-home" development or resort development. As urbanization continues, and housing around Denver becomes more crowded and the area more congested, suburbanites begin looking to the mountains for a "retreat" and the market for second-homes expands. The state needs to step in at some point in this process.

5. Transportation

a. As pointed out in preceeding sections, transportation has a definite impact on recreation and urbanization in Colorado. The availability of high-speed access roads giving access to previously remote mountain areas directly encourages development in such areas; and, the construction of high-speed highways along the Front Range has influenced the area's urbanization.

b. There are two major highways in Colorado--I-25, which runs north-south the length of the state; and I-70, which will bisect the state from east to west when construction through the Continental Divide is completed. Construction of I-25 was followed by increased congestion along the Front Range from Fort Collins to Pueblo. I-70 encouraged subdivision and suburban development, and extension through the mountains will be followed by mountain development in presently undeveloped areas.

c. Better, improved highways result in increased automobile use, and increase the accessibility to downtown Denver from outlying

areas. Expanded parking lot construction downtown follows. Paradoxically, as more parking lots are constructed, more people use automobiles to commute. As road and highway construction increases accessibility to the metropolitan center from outlying areas, the latter areas become correspondingly suitable for housing development and attractive for prospective house buyers. Improved highways increase mobility from the downtown area to the suburbs and encourage business and industry to relocate outside city limits in the suburbs, with their more pleasant surroundings and higher quality air and water, allowing industries to emit pollutants on a scale that would be impossible in polluted Denver conditions. Subsequently, employees seek to relocate their living places in nearby housing developments for convenience; and, housing construction is, therefore, spurred. Suburban governments and chambers of commerce encourage the process in order to establish a broader tax base; however, they discover that the demand for increased public services outstrips quickly increased tax revenues.

d. Colorado's transportation system is highway dominated. Increased highway construction consumes significant amounts of land and partially defines the use of surrounding land. For instance, higher capacity transportation modes (new or improved highways) allow the public to use existing recreational sites or developments at a higher level than previously; subsequently, recreational developers feel the need for expanded or new recreational developments to tap increased public mobility. "Second-

home" construction is encouraged in the same manner. Furthermore, road construction in the mountains presents a high erosion potential, limiting the uses the land surrounding roads may be put to.

e. The Regional Transportation District has recognized the causal relationship of transportation on development (see a. Urbanization). The RTD uses an Annual Work Plan as a management tool for accomplishment of the transportation and land-use planning process in the Denver region. The RTD, the Colorado Department of Highways, and the Denver Regional Council of Governments work closely together to identify priorities and to arrive at a year-long comprehensive plan for the region.

f. This type of cooperation is essential for proper land-use planning. It is much more likely that cooperative effort between these service authorities will result in more land-use planning in the immediate future for the Denver area than the Colorado Land Use Commission will be willing or able to effect.

g. One basic need, besides the planning already being conducted, is the identification of the most desirable alternative means to highway construction and the use of automobiles. This need is common to most major urban areas. This is one area in which the proposed 1976 Winter Olympics may have a beneficial effect--bus service is already being expanded in anticipation of the massive influx of people into the area, and a mass transit system is being considered. Of course, this will very likely have the detrimental effect of encouraging growth in Colorado, but this is a matter that gets to the question of whether or not the Olympic Games should be held.

h. However, since the automobile is the major pollution source in the Denver area, and since Denver "boasts" the highest ratio of cars to population in the nation, the need for alternative transportation modes is imperative. If such alternatives are not developed, strict control of automobile use in the downtown area will be required. The Region VIII EPA Headquarters recently emphasized the possibility of this need surfacing when it suggested controls the City of Denver should consider for traffic restraint if voluntary action proves insufficient to protect public health. The EPA suggested that 1) Denver immediately institute bus lanes on city streets; 2) Denver begin a phase-out of downtown street parking in six months; 3) Denver begin to plan and construct freeway bus lanes within a year; 4) an annual parking tax be instituted for commuters in a year and a half, starting at \$200 a year and rising to \$450 a year in six years; 5) in three and a half years a "freeway metering and exit toll program" which would limit freeway traffic and provide exit tolls of \$1 per car during rush hour peaks be adopted; and 6) a "wheel tax" (in effect, an automobile ownership tax) be established in two and a half years that would amount to \$100 the first year and increase to \$600 in six years. The EPA pointed out that, because of Denver's elevation or high altitude, and because of the existence of old cars, new pollution controls on 1975 cars will not benefit the Denver until the 1980's. This distinction Denver shares with 38 other U. S. cities.

i. The EPA has also spoken out against new downtown parking

lot construction on several occasions. Obviously, the lack of downtown parking will discourage automobile use.

j. Expansion of bus service should continue. However, the overriding need is for a feasibility study for a mass transit system in the Denver metro area. And the state needs to look beyond just the Denver region and consider the impact of transportation statewide, especially as it relates to development in the mountains.

6. Energy

a. Colorado, as with several other states in the region, promises to be a major source of energy in the future. At the present time, coal provides most of the energy produced in the state. About 14 percent of the state's land area is underlain with coal which is economically stripable. The Bureau of Mines estimates that strip-mining for coal in the west will quadruple in the next four years. Thus, the so-called energy crisis will take its toll on Colorado land, particularly on the western slope.

b. Colorado will not become a major energy state on the basis of its coal deposits alone, however. Developments in natural gas stimulation by nuclear blasts, oil shale utilization, and nuclear energy promise to be the big factors in Colorado's energy future.

c. Colorado's economically recoverable natural gas supply is presently so small that it would supply current U. S. demands for less than a month and a half. The Bureau of Mines estimates, however, that 317 trillion cubic feet of gas may be locked up

in low-permeability rock formations in Colorado, Wyoming, Utah and New Mexico. By fracturing these formations with underground atomic blasts, some of this gas could be made available. If successfully and safely carried out (and there is some question), this new gas supply would certainly encourage development.

d. Oil shale is Colorado's big hydrocarbon energy reserve, possibly more than six times as large as the state's coal reserves, and equal to the present estimated world's petroleum reserves. Most of it is concentrated in north-western Colorado. As the processing technology gets better and the other petroleum sources become more depleted, we can expect north-western Colorado to be exploited, both by shaft mines and strip mining. Six leases have been proposed to be awarded by the Department of Interior for oil shale prototype developments. The DOI has recently completed an extensive, 1,000 page draft environmental impact statement on oil shale development. Generally, their conclusion was that, though extensive environmental damage would occur, the economic and energy potential of oil shale was too great to ignore. One interesting note was that 47,000 people could be expected to accompany the oil shale operations along the Colorado-Utah border, with more arriving after initial operations are completed and development intensifies.

e. Colorado's liquid petroleum and natural gas liquids represent a very minor energy supply. Our entire reserves would supply the nation for about a month.

f. As nuclear energy becomes more feasible, Colorado can be expected to supply more and more uranium for the fission reactors. Over 90 percent of the nation's uranium supply is in Colorado, Wyoming, Utah, and New Mexico. It is hoped that so-called breeder reactors, which operate by nuclear fusion, can be developed and put into use quickly. Using only fission reactors, the U. S. uranium supply could be depleted in the next 20 to 30 years. Breeder reactors would utilize the low-grade uranium and thorium ores scattered around the country, and their use would take some pressure off of Colorado. Concerning the disturbances to the land caused by uranium mining at present, extensive research should be undertaken in nuclear fusion and alternative energy sources.

g. An amount of fresh water equal to half the annual flow of the Colorado River will be consumed in energy production if present plans are realized. In Colorado's semi-arid climate, this will result in unimaginable compromises with recreation, irrigation, urban, domestic, and industrial water supplies. Many Coloradoans are unaware of the threat energy poses to the state's future. The State government, moreover, has usually been non-resistant to the forces of energy development; but, it recently formed a task force to investigate the environmental effects of oil shale development, including its land-use impact. Hopefully, this is an indication of increasing state awareness of its responsibility to inform the Colorado public of Colorado's energy resources and the effects of development, so that the people will recognize

the threat before they permit high tension lines and pipelines to damage their scenic mountains and forests.

7. Agriculture

a. In the midst of increased water development, irrigated agriculture is on the decline. Most of the water rights in the state are owned by irrigation companies and farmers' organizations. They can sell their water to municipalities and developers for more than it is worth in irrigation.

b. Some of the land brought under dryland cultivation under the Homestead Act is unsuitable for cultivation. The Great Plains Program of the Soil Conservation Districts is encouraging retirement of this land to grazing.

c. Consumptive land-use for urbanization, recreation, and mineral development also take their share of land that would otherwise be, and often is, used for agriculture.

d. In short, as the demand for agricultural land becomes greater, farmers and ranchers are pressed to either leave agriculture or make their land produce more than it normally would. It is this second prospect which results in overgrazing, overuse of fertilizers, and the temptation to use all the land regardless of its capabilities and limitations.

8. Land Erosion

a. Land erosion affected 8,412,000 acres in 1967. The most serious damage was done in the Colorado River drainage, where 6,573,700 acres were affected. The Arkansas-White-Red River drainage had 1,124,700 acres damaged by erosion.

b. Erosion leads to silting of streams, affecting irrigation systems. Serious erosion can greatly determine land-uses downstream by defining the uses water may be put to.

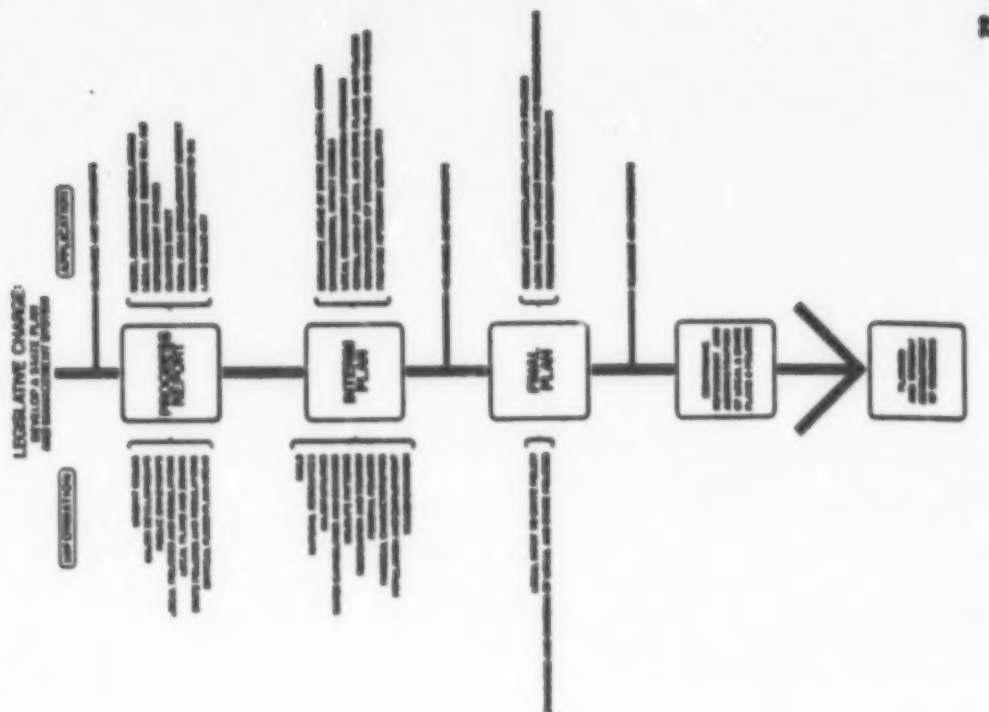
9. The Colorado Land Use Commission

a. Following is a reproduction of an outline of the responsibilities of the Colorado Land Use Commission that was included in the LUC's February, 1972, Progress Report.

ELEMENTS OF THE PLANNING PROCESS

Each of the major steps of the plan includes the following elements:

- Identification and Analysis: The process of documenting (1) state natural and man-made resources, (2) land capabilities, population, employment, and development trends; and (3) local, state, and federal policies and controls.
- Operations: The development of proposed legislation and policies as a result of findings in the course of the Land Use Commission's work program.
- Development and Submittal: The presentation to the Governor and General Assembly of this progress report; the Interim Plan, due in September of this year; and the Final Plan, due in December 1973.



STATE LAND USE PLAN AND MANAGEMENT SYSTEM

Colorado has committed itself to finding ways of making wise use of its basic resources. The State Land Use Plan and Management System is a planning process, the products of which contribute to a cumulative, continuously updated body of policies and plans, public information, and programs of action. This process includes three major steps:

- Progress Report, due February, 1972
- Interim Plan, due September, 1972
- Final Plan, due December, 1973

1.

PROGRESS REPORT

This report documents the work, findings, and recommendations of the Land Use Commission to date. It also outlines the future activities of the Commission and other state and local agencies in developing the Land Use Plan Management System.

2.

INTERIM PLAN

The Interim Plan will contain specific plan recommendations with respect to resources, capabilities, trends, and policies determined during the identification and analysis phase. These recommendations will center around the following areas:

- Criteria and standards for assignment of specified environmental issues as areas of local, regional, or state concern and delineation of the responsibilities and authorities of the particular agencies involved.
- Specific planning tools (impact models, forecasts, data, and criteria) for use by the various state and local agencies.
- Explicit land use recommendations for identified critical areas, such as major recreation areas, transportation facilities, important conservation areas, and areas documented as having hazardous conditions.
- Financial programs associated with land use recommendations to ensure that state and local agencies have the resources to perform adequately and where appropriate, to recommend some form of restitution to private landowners for the effects of public environmental policy.
- Administrative and management requirements of state and local agencies with regard to the planning, evaluation, and regulation of public and private land use.
- Identification of remaining deficiencies in the planning and implementation of land use change in Colorado. These deficiencies will be identified by the issues involved, the locations where they now occur and may occur in the future, and other native approaches to their resolution.



County Control Over the Subdivision of Land

The majority of problems identified at the task force meetings are related to the proliferation of subdivision activity. Further, certain characteristics of many new subdivisions exempt them from zoning and building codes. Thus, the development and local administration of adequate subdivision regulations is a necessary step in ensuring the proper development of land resources of Colorado counties.

The purpose of this documentation is not to criticize local government. Rather it is to assist in the determination of ways in which policies and plans may be most appropriately extended and improved by means of the following:

- Providing guidelines for land use policy and control considerations such as model multi-use controls and change-in-use criteria related to growth characteristics.
- Identifying new and better methods of land use planning and control which have been applied by some local governments.
- Defining areas where necessary state or federal support is lacking, spotty, or untapped by local government.
- Document the need to provide more precise interpretation of current county authority with respect to land use planning and controls.

Many of the concepts developed from this and other information are now being converted into objectives and recommendations for implementing programs and policies for inclusion in the interim plan. Others, such as those to improve the control of subdivisions, are included in this report for immediate consideration. This process and the resulting objectives and recommendations have been designed to maintain and improve control of environmental planning by local county governments which are responsible for the vast majority of the private undeveloped lands of Colorado.

The following documentation of county planning and control is based upon land use plans, zoning, and subdivision resolutions adopted by counties prior to the preparation of this report. As noted elsewhere, some counties are currently making substantial efforts to adopt or upgrade plans and controls. The Land Use Commission will continue to document the changing status of land use planning and control for the purpose of determining the ability of local government to deal with land use issues and identifying areas in which the Land Use Commission and other state agencies may assist local government.

• Subdivision Resolutions

• L.U.C. APPROACH

• Correlate Controls

• Identify Better Planning Methods and Controls

• Flag Areas of Need

• Document the Need for Defining Local Authority

• DOCUMENTATION OF PLANNING AND CONTROL

- CATALOG EXISTING PLANNING PROGRAMS AND RESOURCES
- WORK WITH OLYMPIC AGENCIES AND PROVIDE EVALUATIONS

- DEVELOP MODEL SUBDIVISION REGULATIONS

- ESTABLISH GROWTH MONITORING SYSTEM

- CREATE ADVISORY COMMITTEE

- HOLD PUBLIC HEARINGS

This will provide a continual survey of the nature of development and its indirect, as well as direct, impacts upon the environment.

- Utilize, recognize, and evaluate all existing local, state, and federal land use patterns, land use plans, policies, standards, and procedures affecting land use.
 - Cooperate with the Olympic agencies regarding the 1976 winter events to ensure that environmental and ecological factors receive equal consideration to technical factors in site selection; accept and manage gifts and grants for such purposes on behalf of the state; evaluate community impacts associated with the Olympics; specify information needed for impact studies to the Governor and General Assembly. Thereafter, complete impact statements as needed and indicate findings to the Governor and to local areas to guide further required land use — environmental control actions.
 - Develop model subdivision regulations in accordance with the existing county planning law for use by the counties in meeting the legislative requirements of Senate Bill 92, 1971, and distribute these model regulations to the counties by January 1, 1972.
 - Establish a growth monitoring system via an improvement notice procedure adopted by the 1971 General Assembly and by subdivision plan review to commence July 1, 1972.
 - Appoint and confer with an Advisory Committee to serve until January 10, 1974, representing various interest groups, covering the twelve planning regions.
 - Hold such public hearings as necessary to the development of the planning program with at least one such meeting in each planning region of the state.
- The Land Use Commission has made progress in each of these work items. The following subsections briefly describe the work compiled to date, some of the findings of this work, and the immediate action recommendations of the Commission.

SUMMARY OF RESPONSIBILITIES

The Land Use Commission has been charged by the General Assembly to develop a statewide Land Use Plan and Management System. The purpose of this plan and management system is to ensure a planned and orderly development of the state with special emphasis on balance in future growth and attention to the preservation of the environment and our public resources. In carrying out this charge, the Land Use Commission is to:

- CHARGE:
TO ENSURE THE PLANNED
AND ORDERLY DEVELOPMENT
OF THE STATE

1. Develop an Interim Land Use Plan by September, 1972. This plan will include information and recommendations concerning land capabilities and natural resources; existing state and local land use controls; problems of specific economically depressed areas; local policies concerning future development; criteria for the designation of areas of state concern and local concern, and the authority of the state and local agencies in such areas; documentation of state and federal growth policies and their implications for Colorado; and some preliminary conclusions and recommendations related to land use policy in the state.

- DEVELOP INTERIM LAND USE
PLAN

2. Develop a Final Land Use Plan and Management System by December, 1973. This plan will expand the coverage of the land use policy and regulations elements of the Interim Land Use Plan throughout the state and add specifications to environmental land use planning criteria and control standards. It will include proposals for and evaluation of significant land use proposals, such as airports and ground transportation networks. It will provide for detailed water allocations and sewage treatment facilities planning, state and regional recreation facilities, regional economic development planning, environmental control, and specifications of impacts for continual plan management procedures.

- DEVELOP FINAL LAND USE
PLAN

3. Implement planning techniques, including:

- DEVELOP PLANNING AND
IMPLEMENTATION
TECHNIQUES

- An environmental matrix — a system of evaluating environmental problems and the effectiveness of existing and proposed controls.
- A management matrix — a continual appraisal of current land use law and policy at all levels of government as they affect Colorado.
- A growth monitoring system — a continual documentation and evaluation of the amount and type of growth occurring in the state.
- Impact models — specific measures and evaluations of effects which certain activities such as major land developments or the Olympics would have on the state, regions, and communities.

b. Colorado faces several distinct and significant hurdles that must be overcome if the state is to realize statewide land-use control. The first, basic to all regulatory questions involving overlapping governmental jurisdictions, is significant in Colorado. The state has only limited legislative authority to manage land-use. Land-use controls are vested almost solely in local government.

c. One partial exception to this rule of local control is state subdivision regulation authorized by SB 35, which was enacted by the 1972 session of the Colorado General Assembly. This legislation set minimum standards for subdivisions. It was recommended by the Colorado Land Use Commission. The intent of SB 35 is to give local governments a means to ensure orderly development and to give the state regulatory and enforcement powers over subdivision regulations. Analysis of this legislation and the rationale behind it illustrates several key points about Colorado land-use efforts.

Senate Bill 35

Briefly, this legislation sets minimum state standards for county subdivision regulations. It changes the definition of subdivision or subdivided land to include land divided into lots of less than 35 acres per interest. County commissioners are required to submit subdivision regulations to the Land Use Commission for certification by September 2, 1972. If, however, a county fails to either submit such regulations or refuses to adopt the state's definition of subdivision, the Land Use

Commission "may" promulgate subdivision regulations for the county's unincorporated areas, and any regulations later promulgated by the county may be no less stringent than the interim regulations of the LUC.

SB 35 requires that subdividers submit to the county commissioners "data, surveys, analyses, studies, plans and designs" including relative site characteristics with respect to topographical information (streams, vegetation, etc.), geological characteristics having a significant effect on the use of the land and their impact on the proposed subdivision, and soils type maps and tables of soils suitabilities in the development area. The subdividers must also present adequate evidence of the availability of a water supply sufficient in terms of quality, quantity, and dependability, and adequate for the needs of the proposed subdivision. Proposed sewage disposal means complying with federal and state standards must also be documented.

Until the county gains the LUC's certification of its regulations, it must send to the LUC a copy of each preliminary plan or final plat which it receives from a subdivider. When certification is granted, each board of county commissioners will send a monthly subdivision summary report to the LUC. Finally the subdivider must submit agreements to the county commissioners called "performance guarantees." These relate to assurances by the developer that needed public improvements in the development area will be made.

The Colorado Land Use Commission should be commended for its active support of this legislation. It is the only tool the state possesses to directly control any form of land-use within Colorado. Unfortunately, however, there are several significant deficiencies in the legislation as finally passed:

1. A key phrase in the legislation is contained in section 106-2-34: ". . . the land use commission may (emphasis added) promulgate . . . subdivision regulations for such areas of the county for which no subdivision regulations exist." Thus, it is left entirely to the discretion of the LUC to establish such regulations where the county fails to do so itself.

2. Another significant aspect of the legislation concerns the subdivision definition. Counties are forbidden to change the definition in any way. However, no provision, other than the threat of possible LUC-promulgated regulations for the county, provides any penalty for failure to adopt the state definition. There is a distinct possibility that several counties may, in fact, refuse to conform to this definition in defiance of the LUC and, perhaps, in anticipation of the lack of LUC action in any case. This defiance is encouraged by the LUC in a June, 1972 publication titled A Handbook on Senate Bill 35, which was prepared to facilitate county and public understanding of the provisions of the bill. In one section, "Important Points to Remember," the LUC states: "County commissioners should consult their county attorney on problems of interpretation of the provisions of Senate Bill 35."

County government resists state control in areas that local government has traditionally exercised sovereignty, such as subdivision regulations. County attorneys, of course, share this view. Therefore, the Land Use Commission, by suggesting that counties interpret for themselves the provisions of SB 35, is weakening the directive that counties cannot alter the definition of subdivision; subsequently, the counties are, in effect, invited to challenge both the LUC's willingness to take action and the state directive.

This is a significant point because the new definition includes a much greater number of developments than previously; and, the counties, many controlled by real estate interests, often don't want to include or regulate such development.

3. The provisions of SB 35 apply only to proposed subdivision developments. A companion bill, SB 36, which would have applied similar controls to approved subdivisions that are already platted, was defeated with little resistance from the LUC.

d. The Land Use Act of 1971 directed the LUC to recognize that land-use authority should be at the lowest level of government possible. The LUC itself recommended this policy, and SB 35 endorses the policy further by giving local governments primary control over subdivision regulations. Thus, the legislature has affirmed the concept of local zoning and rejected the idea of statewide zoning.

e. County government has two power sources to tap for land-use control. The first is the statutory enabling power granted

by the legislature; the second is the police power.¹⁰ From these sources three basic tools have developed: (1) zoning; (2) subdivision regulation; (3) master plans. However, counties only have power over "unincorporated territory" within their jurisdictions.¹¹

f. Implicit in the legislative directive concerning the location of land-use controls is the belief that counties or local governments will willingly conform to the recommendations of the LUC and the state land-use plan; or, that these local governments will accept the recommendations as necessary for their counties' and the state's welfare. Otherwise, state-promulgated minimum requirements for county zoning will be necessary with provision for state enforcement where the county fails to follow the state plan.

g. Another shortcoming of Colorado's Land Use Commission is that the efforts of the LUC have so far been investigative in nature, directed toward research and planning, and not control. Planning is, of course, necessary if land-use is to be controlled wisely, and the LUC has done an outstanding job in this area. Yet, it is equally evident that planning serves no purpose if there is no means of control. Before the LUC can have a meaningful and beneficial impact on land-use in Colorado, it must come to grips with jurisdictional matter

¹⁰Richard D. Hoadley, "The Power of Counties to Control Land Use in Colorado," ROMCOE Land Use Packet; Rocky Mountain Center on Environment (November 1971); p. 6.

¹¹Ibid.

involving land-use controls. In other words, in order to be effective, land-use controls must be vested in the LUC or another state agency, or county compliance with a state land-use plan must be insured, so that land-use within Colorado may be regulated on a uniform basis and, subsequently, so that all land-uses will be compatible with each other. Unfortunately, however, the LUC has avoided this matter and its attendant controversy and, instead, retains a scope of purpose advisory in nature, substantially limited to planning and research.

h. This narrow planning function would, perhaps, not be objectionable if the need for, and importance of, state land-use control throughout the nation was not so immediate; and, if the LUC had indicated any preparation to advance positive recommendations for state implementation of its final plan. Furthermore, the LUC has virtually refused to attempt any regulatory action itself, or to assume such a role for itself. This reluctance to involve itself in political controversy is underlined by the LUC's evident refusal to implement "emergency powers" to prevent or stop land development that the LUC finds dangerous to human health or the environment. Use of this authority is contingent upon the consent of the Governor. The LUC's refusal to use these powers is even more puzzling when it is remembered that the LUC recommended such authority for itself in December, 1970.¹²

¹²At the same time, the LUC requested and received authority to review any sites chosen for the 1976 Olympic Games and to promulgate land-use controls for those counties that host Olym-

i. In all fairness, it must be pointed out that the LUC has a limited mandate from the legislature. The Colorado General Assembly must assume, with the Governor, a significant portion of the blame for the LUC's shortcomings and regulatory failings. Unfortunately, the LUC has seemed to be more concerned with keeping clear of political controversy than it has been with insuring effective state land-use control; and, in the process, it has become subject to politics. The legislative branch has not reacted to the immediacy of an environment in Colorado threatened by poor land management (or lack of land management) with the drive of other state legislatures in states facing similar problems, notably Vermont.

j. Colorado's land-use problems are, in significant aspects, similar to those in Vermont. Both states have undergone extensive recreational and "second-home" development. Both states have experienced drastic increases in population. Yet, the two differ in their approaches to their shared problems.

k. Colorado has initiated an extensive land-use study, which is to culminate in December, 1973 in a state land-use plan and land-use map. An interim land-use plan was to be submitted to the Governor and General Assembly in September, 1972; however, this plan won't be completed until later in 1972 or early 1973. Except for the LUC's emergency powers

pic events and that are unable or unwilling to establish such controls themselves.

There have been instances where development presented danger to human health (i.e., Marble Mountain ski development in a landslide area), but the LUC has done nothing.

and responsibilities, there will not exist any certain or probable means of state land-use control until the LUC makes its final report and recommendations, and until enabling legislation, or legislation requiring local government compliance with the LUC's plan is passed, if ever.

l. The situation in Vermont contrasts drastically with the Colorado record of "mostly talk, little action." The legislature has passed a site approval law, which regulates development within Vermont's areas of critical environmental concern. Also, the State in 1970 enacted legislation declaring for Vermont "authority over all construction or improvements of commercial, industrial or residential use above the elevation of 2500 feet - without exception." Each such project must gain the approval of a district environmental commission. These legislative actions are interim measures until a comprehensive land-use plan is developed in 1973.

m. Colorado must take the same purposeful action that Vermont has exemplified. Certainly, the potential for environmental degradation from recreational and "second-home" development is as immediate in Colorado in 1972 as it was in Vermont in 1970.

n. With regard to such development, the LUC's and the General Assembly's affirmation (in the Land Use Act of 1971) of local land-use management is misdirected. Local towns, communities, or counties are unprepared to deal wisely with, or to regulate, such massive development and its accompanying

forces. In fact, such small governmental bodies traditionally have encouraged development.

o. No attempt here is being made to attach to development a negative value. The significance of this portrayal is that local governments are too easily subject to political and economic forces beyond their capacity to resist, control or even modify; and yet, this is exactly where the LUC and the General Assembly assert that land-use control should be located. With mountain subdivision development continuing and accelerating, the LUC and the General Assembly should have the foresight to, respectively, recommend and enact a legislative "holding action" along the lines of the Vermont prohibition of construction above 2500 feet until the LUC makes its final report and recommendations, and until such time as the legislature authorizes some form of state control.

p. In November, 1972 the staff of the LUC drafted the LUC's Interim Report, "Review Material for Interim Plan Including Assumptions and Policies," to be submitted to the legislature at the beginning of the 1973 General Session. The staff recognized that uncontrolled growth is threatening Colorado's environment and Coloradoans' life-style:

A continuation of an uncontrolled growth will inevitably produce economic and social declines for most people and degradation and destruction of our mountain environment. Although a small segment of society will continue to prosper as a result, the general populace will suffer from cyclical trends. The momentum of the current trend is strong,

however, and certain vested interests have relied heavily on this momentum. Reversal of the trend and implementation of the Land-use plan, therefore, will command all the power and creative capacity of our state and local governments.

Unfortunately, the LUC has not yet acted with the "power and creative capacity" that the staff proposed the Commissioners endorse in the Interim Plan. Although the LUC adopted many of the stringent policy proposals the staff made, it continues to lack in purpose, and it rejected some of the better staff proposals while not considering others. The Interim Report was to be submitted by September, 1972, but the deadline was extended to December 1. The LUC is likely to request another extension.

q. Most significant is the fact that the state agency or body with most authority over land-use within Colorado is the Land Use Commission, and it has so far not exercised that authority. Also, there is no indication that the final land-use plan will include any means of state implementation of that plan, or any means of state integration of various land-use policies into a single body of law. Briefly, at this time, no state regulatory agency with authority over land-use is contemplated.

APPENDIX. FEDERAL LAND IN COLORADO

About 36 percent, or 23,152,923 acres, of Colorado's 66,485,760 acres is owned and managed by the Federal government. This ownership is spread out among 20 Federal agencies.

The great majority of this land is managed by three agencies: the Forest Service (14,359,639 acres); the Bureau of Land Management (8,465,126 acres); and the National Park Service (527,138 acres). All of these agencies are discussed in detail in Part II: Other Federal Agencies.

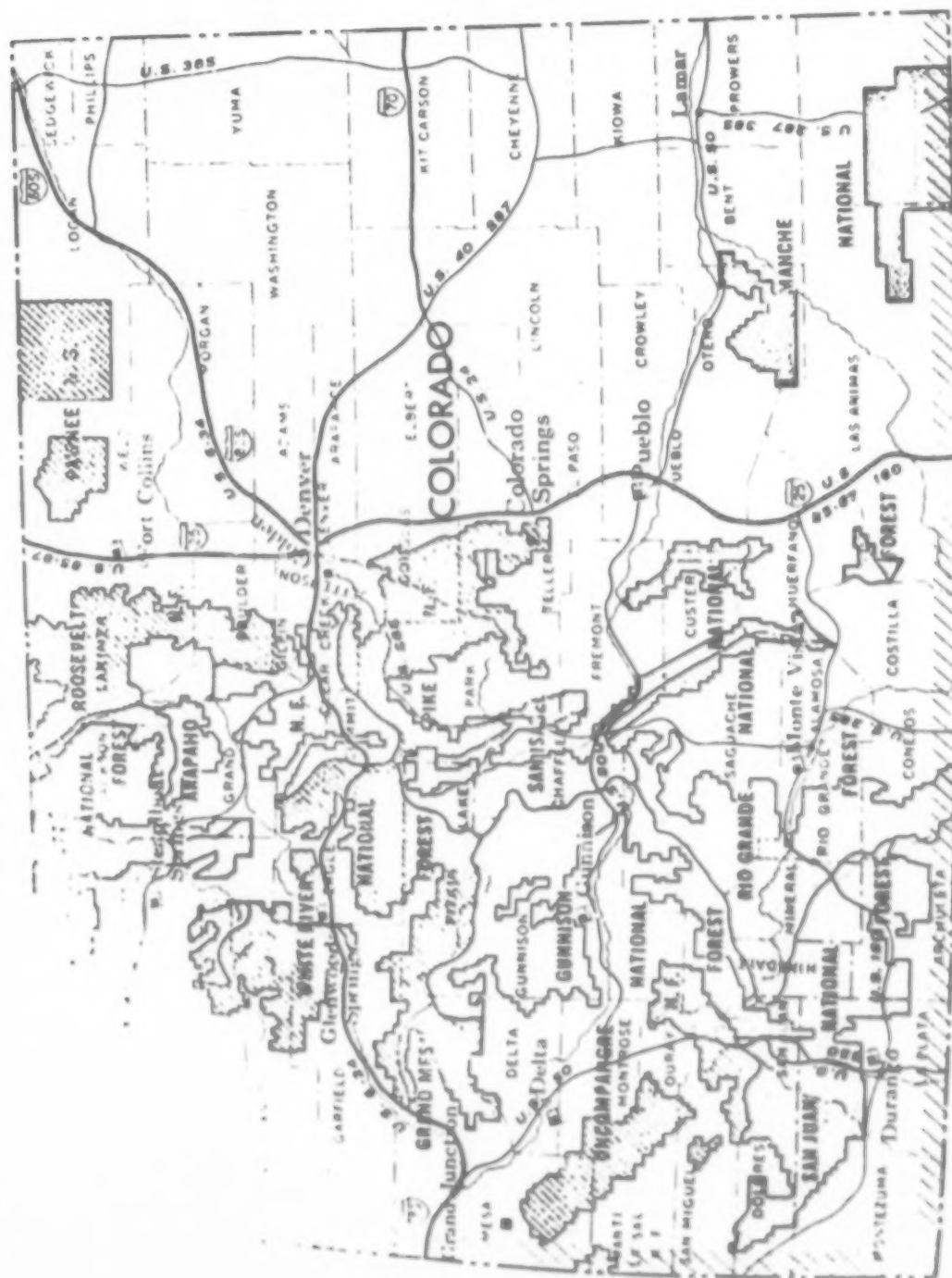
Following is a table which shows the Federal agencies that own land within the state of Colorado and the acreage involved; and, a map showing the location of the U. S. Forest Service land.

FEDERAL LAND IN COLORADO

As of June 30, 1970.

Agency	Acreage
Forest Service	14,334,184
Bureau of Land Management	8,465,126
National Park Service	527,138
Bureau of Reclamation	485,788
Army	180,990
Navy	60,240
Fish and Wildlife Service	35,459
Atomic Energy Commission	30,199
Corps of Civil Engineers	28,872
Air Force	25,889
Department of Agriculture	14,670
Environmental Science Service	2,760
General Services Administration	1,159
Veterans Administration	653
National Bureau of Standards	585
Bureau of Indian Affairs	570
National Science Foundation	566
Federal Aviation Administration	490
Bureau of Prisons	440
Bureau of Facilities	23
Bureau of the Mint	2

Source: The Colorado Investor



Forest Service Land in Colorado

Source: The Colorado Investor

COLORADO INVESTOR

APPENDIX II. STATE AGENCIES

Following is an outline of state agencies that conduct programs or exercise authority that impact land-use within the state. The outline is reporduced from the February, 1972, Progress Report of the Colorado Land Use Commission.

1. Develop guidelines for land use and construction controls within designated floodways. 10b-4-2(c) (a) (1971 Session Laws)
2. Designate critical areas of the state where 100-year floodway should be identified. Shall also designate critical conservation and recreation areas. 10b-4-2(d) (b) (1971 Session Laws)
3. Make available Colorado planning and land use maps to municipalities, counties, and regional agencies in areas having a critical planning need. 10b-4-2(f) (a) (b) (1971 Session Laws)

Power/Duties:

- A. 1976 Winter Olympics: Objectives for Land Use Commission evaluation
 1. Community impacts.
 2. Potential land consumption rates.
 3. Public improvement program and planning. 10b-4-2(f)(c) (1971 Session Laws)
 4. Establish adequate land use regulations for local governments when existing ones do not provide adequate environmental safeguards and same are recommended by the Governor. 10b-4-2(f) (c) (1971 Session Laws)
 5. Issue a cease and desist order, by direction of the Governor, to those land development activities which are in progress or proposed and which constitute a danger of irreparable injury, loss, or serious damage to the public health, safety, or welfare. 10b-4-2(f) (c) (1971 Session Laws)

DEPARTMENT OF ADMINISTRATION

Division of Public Works

- Organic Statute
 - A. Statutory Citation: C.R.S. 10b-1-1 through 10, 1963 (as amended)

- Legislative Declaration of Policy: None
- Geographic Area: Statewide with regard to department's agencies and institutions of the state
- Division Within Department: Office: None
- Responsibilities: Provide the state and its agencies with technical assistance throughout all phases of capital construction projects, except public roads and highways, and projects under the Department of Game, Fish, and Parks.
- Powers/Controls: 10b-1-4
 - A. Provide technical assistance during planning phase of capital construction projects.
 - B. Obtain and maintain a current and current inventory of all real property with improvements thereon, owned or held in trust for the state.

DEPARTMENT OF AGRICULTURE

State Agriculture Commission

- Organic Statute:
 - A. Statutory Citation: C.R.S. 6-1-1 through 17, 1963 (as amended)
 - B. Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Division Within or Related to Department:
 - A. Agricultural Commission—6-1-3 (1969 Supp.)
 1. Power/Duties:
 - a. Formulate general policy regarding management of department and its rules and regulations. 6-1-4(1) (b)
 - b. Make studies related to agricultural policy. 6-1-4(1) (d)
 - B. Other Divisions: Administrative Services, Plant Industry, Animal

LEGISLATIVE CHARGES OF AGENCIES AFFECTING LAND USE (COMPLETED TO DATE)

GOVERNOR'S OFFICE

Coordinator of Environmental Problems (Office of the Governor, Executive Branch)

- Organic Statute
 - A. Statutory Citation: C.R.S. 132-1-9 and -10 (1970 Session Laws)
 - B. Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Divisions Within Department/Office: None
- Responsibilities (a summary):
 - A. Study environmental quality problems.
 - B. Coordinate planning and execution of state programs relating to problems of environmental quality.
 - C. Report to the Governor and General Assembly on existing programs, recommending appropriate new laws and other measures to deal with the problems of environmental quality.
 - D. Submit an annual report to the Governor and the General Assembly in accordance with the Information Coordination Act, C.R.S. 3-3-17, 1963 (as amended).
 - E. Inform the public of the results of all studies made and recommendations transmitted to the Governor and the General Assembly.
- Powers/Controls: The coordinator can recommend that the Governor order a total or limited moratorium for a maximum of thirty days to prevent or minimize any significant risk of a serious danger to the public health arising from any activity, condition or use of any material.

Land Use Commission (Office of the Governor, Executive Branch)

- Organic Statute
 - A. Statutory Citation: C.R.S. 106-4 and -5 (1971 Session Laws), C.R.S. 106-2-34 (1971 Session Laws)
 - B. Declaration of Legislative Intent: Rapid growth and development require new and innovative measures to encourage planned and orderly land use development. Generally calls for use of land and other natural resources in accordance with their character and adaptability, and the promotion of efficient and economical use of public resources. The effective means of attaining these goals is a statewide system of land use.
- Geographic Area: Statewide
- Divisions Within Department/Office: None
- Responsibilities
 - A. Develop a progress report February, 1972.
 - B. Develop an Interim Plan report September, 1972.
 - C. Develop a final land use planning program, December, 1973.
 - D. Evaluate 1976 Winter Olympic planning impacts.
 - E. Develop and hold hearings on state land use plans, maps, and related implementation techniques. 106-4-1(2) (1971 Session Laws)
 - F. Specify development policy and procedures for the future. 106-4-3(1) (a) (1971 Session Laws)
 - G. Develop model subdivision regulations as guidelines for counties. 106-4-4(1) (1971 Session Laws)
 - H. Develop model resolutions to serve as guidelines for county commissioners in developing improvement notice regulations. 106-4-4(2) (1971 Session Laws)

Industry Markets, and Inspection and Consumer Services. 6-1-8 (1967 Supp.)

• **Responsibilities:** Comprehensive service to and control and regulation of agriculture industry to the state

• **Powers/Duties:**

A. Inquire into the needs of agriculture of the state 6-1-4(2)

B. Carry out policies and purposes of the Colorado Agriculture Conservation and Adjustment Act [C.R.S. 6-3-1, 1963 (as amended)] and to promote and administer state plans for the same 6-1-4 (27)

Note: The Conservation and Adjustment Act authorizes a state plan for the general purpose of protecting the welfare of the state by stopping destruction of its soil fertility by uneconomic use and waste of its soil resources.

DEPARTMENT OF HEALTH

Air Pollution Control Commission

• **Organic Statute:**

A. Statutory Citation: C.R.S. 66-31-1 through -26 (1970 Session Laws)

B. Legislative Declaration of Policy: Achieve maximum practical degree of air purity in every portion of the state.

• **Geographic Area:** Statewide, with the exception of home-rule local government entities which have enacted appropriate air pollution laws 66-31-25 (1970 Session Laws)

• **Divisions Within Office/Department:** Air Pollution Variance Board

• **Responsibilities:** Control and prevention of air pollution throughout the state.

• **Powers/Duties:**

A. Develop and maintain a comprehensive program for the prevention, control, and abatement of air pollution throughout the entire state; and promulgate air goals for every portion of the state. 66-31-5 (1) (1970 Session Laws)

B. Adopt and promulgate ambient air quality standards and emission control regulations 66-31-5(1) (1970 Session Laws)

C. May issue cease and desist order regarding any air pollution emergency endangering public health 66-31-1(1) (1970 Session Laws)

Note: An air pollution variance board is also created by virtue of this statute thus permitting the suspension or modification of regulations in some instances. 66-31-15 (1970 Session Laws)

Division of Administration

• **Organic Statute:**

A. Statutory Citation: C.R.S. 66-1-9, 1963 (as amended)

B. Legislative Declaration of Policy: None

• **Geographic Area:** Statewide

• **Divisions Within Office/Department:** None

• **Responsibilities:** Administer and enforce state public health laws

• **Powers/Duties:**

A. Exercise powers necessary to enforce public health laws 66-1-9(b) (c)

B. Hold hearings related to vested responsibilities 66-1-9(d)

C. Administer water pollution control regulations. 66-28-4 (1967 Supp.)

D. Develop a comprehensive program for the prevention, control, and abatement of pollution of the waters of the state 66-28-7(b) (1967 Supp.)

E. Upon request, examine and approve or disapprove plans and specifications for the construction and operation by a political subdivision of new sewage systems, disposal systems, and treatment works 66-28-7(d) (1967 Supp.)

State Board of Health

• **Organic Statute:**

- E. Approve location of all domestic sewage treatment works 66-28-13 (1967 Supp.)
 - F. May request reports of sewage discharged other than into a community sewer system 66-28-12(2) (1967 Supp.)
 - G. The commission has the power to require and issue licenses or permits for the construction and use of septic tanks within any area identified by the commission as an area in which unregulated outflow from one or more septic tanks would or might pollute the waters of the state 66-28-8 (1970 Supp.)
- Note: The reporting of discharge of sewage from family dwellings may be waived by the commission 66-28-12(2) (1967 Supp.)

DEPARTMENT OF HIGHWAYS

Highway Commission/Division of Highways

- Organic Statute
 - A. Statutory Citation: C.R.S. 130-2-2, 1963 (as amended), other related legislation found throughout Chapter 130, Title and Highways.
- Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Divisions Within Department/Agency
 - A. Division of Highways (administration, planning, research, and personnel)
 - B. Colorado State Patrol
 - C. Highway Commission
- Responsibility/Management: construction, and maintenance of public highways throughout the state.
- Powers/Duties
 - A. Formulate general policies with respect to public highway responsibilities 130-2-5

- A. Statutory Citation: C.R.S. 66-7-8, 1963 (as amended)
- B. Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Divisions Within Office: Agency: None
- Responsibility/Rule-making body for public health laws
- Powers/Duties
 - A. Determine general public health policies and related orders, standards, rules, and regulations 66-7-8(2)
 - B. Act as advisor to the Director of Public Health 66-7-8(3)

Water Pollution Control Commission

- Organic Statute
 - A. Statutory Citation: C.R.S. 66-28-1 through -27 (1967 Supp.) (as amended)
- Legislative Declaration of Policy: Prevention, abatement, and control of the pollution of waters in the state for the propagation of wildlife, fish, and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses.
- Geographic Area: Waters of the state.
- Divisions Within Office: Department: None
- Responsibility/Exercise the police powers of the state over state waters and the quality thereof.
- Powers/Duties
 - A. Adopt a comprehensive program for the prevention, control, and abatement of pollution of waters of the state 66-28-5(c) (1967 Supp.)
 - B. Promulgate rules, orders, and standards of water quality and waste discharge 66-28-5(b) (1967 Supp.)
 - C. Issue cease and desist order for violations to rules and regulations 66-28-10 (1967 Supp.)
 - D. Act as final authority on water pollution in the state 66-28-11 (1967 Supp.)

- B. Administer construction and maintenance standards pursuant to section 69-9-7(1) (c), 69-9-5(1) (e)
- C. Research following areas—69-9-5(1) (f) (1970 Session Laws)
 - 1. Housing standards and construction codes based on performance.
 - 2. Modular housing
 - 3. Programs for discouraging concentration of low-income housing.

Division of Local Government

- Organic Statute:
 - A. Statutory Citation: C.R.S. 3-22-1 through -10 (1967 Supp.) (as amended), C.R.S. 3-28-25(2) (d) (1969 Supp.)
 - B. Legislative Declaration of Policy: Assist local government meet new responsibilities resulting from population shifts and other economic and social trends throughout the state.
- Geographic Area: Statewide
- Divisions Within Office/Department: None
- Responsibilities: Provide advice, counsel, and training to local government problems and solutions.
- Powers/Duties:
 - A. Serve as a clearing house for local governments and state and federal agencies 3-22-4(1) (d)
 - B. Provide research and technical assistance to local government 3-22-4(1) (f)

Division of Planning

- Organic Statute:
 - A. Statutory Citation: C.R.S. 106-3-1 through -8 (1971 Session Laws)
 - B. Legislative Declaration of Policy:
 - 1. Provide planning which is essential to the orderly growth and development of the state.

- 2. Effectuate a balanced program for the employment of natural and other resources of the state.
- 3. Plan to meet problems related to comprehensive growth needs.
- 4. Secure economical and efficient expenditure of state's revenues.
- Geographic Area: Statewide
- Divisions Within Department/Office: None
- Responsibilities: Advisory planning role between state level and local level of government
- Powers/Duties—106-3-3 (1971 Session Laws)
 - A. Function as an advisory and coordinating agency.
 - B. Stimulate and assist planning activities on all levels.
 - C. Participate in comprehensive interstate planning.
 - D. Make state planning studies.
 - E. Inventory public and private natural resources of major public and private works and other facilities deemed of importance to state planning.
 - F. Act as the primary state agency of demographic information 106-3-4 (1971 Session Laws)
 - G. Render advice and recommendations on any plan, master or zoning, submitted for review by the planning commission, regional, county or district, making such plan 106-2-21 (1971 Session Laws)

DEPARTMENT OF NATURAL RESOURCES

Executive Director (Commissioner of Mines)

- Organic Statute:
 - A. Citation: C.R.S. 3-15-1, 1963 (as amended) (1969 Supp.)

- B. Make recommendations to Governor and General Assembly regarding the highway policy of the state. 120-2-5
- C. May purchase land and use eminent domain when required. 120-3-8
- D. Adopt a master plan for the development and improvement of the state highway system. 120-7-2

DEPARTMENT OF LOCAL AFFAIRS

Division of Commerce and Development

- Organic Statute
 - A. Statutory Citation C.R.S. 3-18-1 through -16, 1963 (as amended). C.R.S. 3-28-25, 2, 3, 1969 Supp.
 - B. Legislative Declaration of Policy: Plan and promote the economic development of the state
- Geographic Area: Statewide
- Divisions Within Department: Office
 - State Council on the Arts and Humanities
 - Advisory Commission
 - Motion Pictures and Television Commission
- Responsibilities: (Noted in Organic Statute, B)
- Powers/Duties
 - A. Encourage and stimulate local planning, promotion, and development activities. 3-18-3(e)
 - B. Develop, promote, and coordinate long-range plans for the economic development of the state. 3-18-3(2)(d)
 - C. Stimulate and guide area redevelopment plans in those areas of the state with declining economies. 3-18-3(2)(c)
 - D. Promote and develop new commerce, industry, labor, agriculture, professions, and other sources of economic wealth for the state. 3-18-3(2)(e)

- E. Direct statewide program for the development of tourism as a major industry. 3-18-3(2)(f)
- F. Conduct a state economic research and information center. 3-18-3(2)(h)
- G. Coordinate, stimulate, and assist efforts of government and private agencies engaged in Colorado development and promotional activities. 3-18-3(2)(i) (1967 Supp.)

Division of Housing

- Organic Statute
 - A. Statutory Citation C.R.S. 69-9-1 through -14 (1970 Session Laws) (as amended)
 - B. Legislative Declaration of Policy
 - 1. It is essential to promote coordination and cooperation among private enterprise and state and local government for the provision of adequate housing
 - 2. Mass production of housing is encouraged
- Geographic Area: Statewide
- Division Within Office: Department
 - A. State Board of Housing
- Note: The board holds two significant powers regarding land use development.
 - 1. Can establish uniform construction and maintenance standards for hotels, motels, and multiple dwellings in those areas of the state where no such standards exist. 69-9-7(1)(c) (1970 Session Laws)
 - 2. Recommend uniform housing standards and building codes. 69-9-7(d) (1970 Session Laws)
- Responsibilities: Encourage the expansion of state housing facilities through new construction and rehabilitation.
- Powers/Duties
 - A. Assist local communities develop housing authorities. 69-9-5(1)(c) (1970 Session Law)

1. Requires mining operators to file for a permit prior to initiation of mining activities. 92-13-5
2. Requires a reclamation plan and map which shows affected area. 92-13-4(b)
3. Reclamation for homesites, recreational, industrial, or other uses shall include basic minimum requirements as agreed upon by the operator and the Executive Director. 92-13-6(m)
4. May require a performance bond. 92-13-8

Board of Land Commissioners

• Organic Statute:

A. Constitutional Citation: The board is a constitutionally created body which has the direction, control, and disposition of the public lands of the state under such regulations as are prescribed by law (Colorado Constitution, Article IX, S 9) The board has the duty to provide for the location, protection, sale, and other disposition of all the lands granted to the state by the federal government. (Colorado Constitution, Article IX, S 10)

B. Statutory Citation: Colorado Revised Statutes 112-2 through 112-7, "Public Lands and Rivers," 1963 (as amended)

C. Legislative Declaration of Policy: (Generally stated in Constitutional provisions)

• Geographic Area: State lands

• Divisions Within Department/Office: Mineral Department—112-3-39.

• Responsibilities/Least Direction, control, and disposition of public lands of the state

• Powers/Controls (reference to specific Articles in Chapter 112, "Public Lands and Rivers"):

A. Article 2—Desert Lands:

1. Select, manage, and dispose of lands now or hereafter granted to the state by the United States. 112-2-4
2. Register all said land transactions. 112-2-5

3. Make rules and regulations regarding reclamation projects on said lands and keep maps and plats for lands selected for same. 112-2-6

4. Require a request for selection of land to be reclaimed and designate said land by legal subdivisions. 112-2-7

5. Analyze reclamation requests by considering water supply feasibility of construction, and capacity of the works. Reject request if the State Engineer reports adversely on any above noted considerations. 112-2-11

B. Article 3—State Board of Land Commissioners:

1. May lease any portion of the land of the state. 112-3-13
2. Authorized to join in a cooperative or unit plan of development or operation of oil or gas areas. 112-3-15
3. May cause any portion of state or school lands to be laid out in lots and blocks or other tracts by a recorded plat. 112-3-23
4. Regulate mining development operated under leases from the state. Authorized to establish a Mineral Department for said regulation. 112-3-39

C. Article 4—Reclamation of State Lands:

1. Authorized to furnish and secure water rights for state lands. 112-4-1
2. Authorized and directed to irrigate and improve state lands when desirable. 112-4-4
3. Holds the power of eminent domain to acquire the desired rights or easements, occupancy, or possession. 112-4-8

D. Article 7—Forestry:

1. Empowered to sell and otherwise dispose of timber on state lands.
2. Create and administer the Colorado State Forest

Note: 112-7-13 transferred all rights, powers, and duties for protecting, promoting, and extending the conservation of forests in the state to the State Board of Agriculture. However, 3-15-4 transfers the State Board of Agriculture in respect to lands owned or controlled by the state to the State Board of Natural Resources. The same performed pursuant to state forest lands (112-7-13 to 112-7-19) to the Department of Natural Resources. The

B. Legislative Declaration of Policy:

1. Encourage the full development of the state's natural resources to benefit all Colorado citizens.
 - a. Create a Resource Management Plan to fully utilize natural resources consistent with realistic conservation principles.
 - b. Develop the plan as a joint effort between the Governor and the Executive Director of the Department of Natural Resources.
 - c. Negotiate with the federal government through the Governor and the Executive Director in all resource and conservation matters.

Geographic Area: Statewide

Divisions Within Department Office:

- A. Water Conservation Board
- B. Soil Conservation Board
- C. Board of Land Commissioners
- D. Division of Mines

1. Bureau of Mines

2. Chief Inspector of Coal Mines

3. Mining Industrial Development Board

E. Division of Water Resources

1. Office of the State Engineer
2. Irrigation Division Engineers
3. Water Commissioners
4. Ground Water Commission
5. Water Well and Pump Installation Contractors Board
6. Irrigation District Commission

F. Oil and Gas Conservation Commission

G. Colorado Geological Survey

H. Division of Game, Fish, and Parks, and the commission thereof.

Responsibilities of the Executive Director

- A. Require an annual report from the head of each subordinate agency containing such information and submitted at such time as the executive director shall decide.
- B. Submit an annual report to the Governor and the General Assembly in accordance with the Information Coordination Act, C.R.S. 3-17, 1963 (as amended)
- C. Exercise control over publications of the department or any divisions thereof.

Powers/Controls

- A. May request from the State Board of Agriculture information and statistics concerning forests and forestry in the state, and other reports which may be required.
- B. Shall have the power and duty to develop, encourage, promote, and implement programs for the prevention, abatement, and control of litter, and may enter into appropriate contracts for the implementation of such a program.
- C. May contract with the Colorado School of Mines to develop and conduct research concerning:
 1. New and more efficient methods of mining, preparing, and utilizing coal.
 2. Markets for coal of the Western United States, and especially that of Colorado.
 3. Development in the scientific, technical, and economic fields related to the coal industry.

Other Statutory Provisions

- A. The Colorado Open Cut Land Reclamation Act of 1969, C.R.S. 92-13.1 (1969 Supp.) This Act basically calls for the Executive Director of the Department of Natural Resources to provide, after mining operations are completed, for the reclamation and conservation of land subject to surface disturbance by open cut mining.

repeal of this latter provision in 1969 apparently reverts the original powers back to the Board of Agriculture

Colorado Geological Survey

- Organic Statute
 - A. Citation Colorado Revised Statute 64-1-1963 (as amended)
 - B. Legislative Purpose Declaration of Policy Coordinate and encourage by use of appropriate means the full development of the state's natural resources as the same are related to the geological processes that affect realistic development of human and mineral utilization and conservation practices and needs of the state
- Geographic Area Statewide
- Divisions Within Department Office None
- Responsibilities:
 - A. Advise state and local government agencies on geological problems
 - B. Promote economic development of mineral resources
 - C. Study and inventory state geological information
 - D. Evaluate physical features of Colorado with reference to present and potential human and animal use
 - E. Determine areas of natural geological hazards that could effect the safety of or economic loss to citizens of Colorado
 - F. Prepare necessary reports and maps

Division of Game, Fish, and Parks

- Organic Statute
 - A. Statutory Citation C.R.S. 62-1 through 23-1963 (as amended)
 - B. Legislative Declaration of Policy The fish and wildlife and their environment and the natural scenic scientific and outdoor recreation areas of the state are to be protected preserved enhanced and managed for the use benefit and enjoyment of the people of the state includes continuous operation of planning acquisition and development of outdoor recreation lands

waters and facilities to provide a comprehensive program of outdoor recreation 62-1-2 (1969 Supp.)

- Geographic Area State parks and recreation areas
- Divisions Within Department Office Commission of Game Fish and Parks
- Responsibilities (Noted in Organic Statute B)
- Powers/Controls:
 - A. Acquire such interests in land and water as are deemed necessary for the objectives of the commission 62-1-11 (1969 Supp.)
 - B. Cooperate with state agencies and other entities for the development of game fish and parks 62-1-11 (1969 Supp.)
 - C. Adopt rules and regulations for the administration protection and maintenance of all state parks and recreation areas 62-1-10 (1969 Supp.)
 - D. Prepare maintain and keep up to date a comprehensive plan for the development of the outdoor recreation resources of the state 62-2-8 (1969 Supp.)
 - E. Examine and investigate and force into arbitration with the Governor if necessary all plans which may obstruct damage diminish destroy change modify or vary the natural existing shape and form of any stream or its banks or tributaries by any type of construction 62-14-2-5 (1969 Supp.)
 - F. Authorized to establish and maintain recreational trails by the development of a state trails system 62-15-1 (1971 Session Laws)

Division of Mines

- Organic Statute
 - A. Constitutional Citation The position of Commissioner of Mines found within the Division of Mines in the Department of Natural Resources is created by the State Constitution for those duties which shall be described by law (Colorado Constitution Article XVI 5-1)
 - B. Statutory Citation The Division of Mines includes the following parts with principal citations

1. Coal Mines
 - a. Board of Examiners) C.R.S. 92-2-1 to 92-2-33
) (1963)
 - b. Inspector of Coal Mines) (1963)
 2. Metal Mines and Mining
 - a. Bureau of Mines—C.R.S. 92-32-1 to 92-32-19 (1963)
 - b. Mining Industrial Development Board—C.R.S. 92-34-1 to 92-34-5 (1963)
 - Geographic Area Mining activities throughout the state
 - Divisions Within Department/Office (Noted in Organic Statute B)
 - Responsibilities: General regulation of mining activities throughout the state
 - Powers/Controls (reference to specific entities within the division)
 - A. Board of Examiners (Coal Mines)
 1. Examine and qualify mine officials 92-2-4
 - B. Inspector of Coal Mines
 1. Examine and report on the activities and conditions of coal mines 92-3-1
 2. May close mine when dangerous conditions exist 92-3-2
 3. Require maps of both surface and subsurface area of mining activities 92-7-1
 - C. Bureau of Mines
 1. Generally examine mine works 92-32-5
 2. Examine construction of dams, highways, and excavations 92-32-5
 3. Examine surface areas disturbed by mining activities and the methods of stabilization 92-32-5
 4. May require a performance bond regarding stabilization work 92-32-5
 - D. Mining Industrial Development Board
1. Encourage the development of mining industry in the state. 92-34-5
- Other Statutory Materials
- A. Surveys—C.R.S. 92-25-1
 1. Provide for the survey plotting, and recording of adjoining, abutting, or adjacent fractions of patented mining properties 92-25-2
 2. Provides that the county shall record same and name and number such plots and subdivisions. 92-25-6
 - B. Mine Drainage Districts—C.R.S. 92-28-1
 1. Mining claim owners may form a mine drain district for their common benefit 92-28-2
 2. Shall plot and record said district with the local county clerk and recorder 92-28-9
- Division of Water Resources (State Engineer)
- Organic Statute Water Rights and Irrigation C.R.S. 148-11-1 to 148-11-25 1963 (as amended)
 - Responsibilities of State Engineer (a summary)—C.R.S. 48-11-3 (1969 Supp.)
 - A. Act as executive officer in charge of supervising all division engineers
 - B. Possess executive responsibility and authority with respect to
 1. Discharge of state obligations imposed by compact or judicial order
 2. Securing and implementing legal opinions regarding the jurisdiction
 3. Coordinating the work of the division with other departments of the state government and local governmental entities
 4. Construction contracts, and professional technical or other contracts related to division operations
 5. Division records and investigations regarding its function including water well licensing

development of the waters of the state for the benefit of the present and future inhabitants of the state

- Geographic Area: Statewide
- Divisions Within Department/Office: None
- Responsibilities:

1. Conduct and establish a comprehensive water planning program as defined in Title III of the Colorado Water Resources Planning Act.
2. Make a continuous study of water resources of the state, including an analysis of the impact on the potential economic development of the natural watershed resulting from the transfer of water from one watershed to another.

Powers/Duties

1. Develop a plan for the conservation of water in order to secure the greatest utilization of water and the utmost prevention of floods. Said plan includes the designation of stream or flood-water runoff channels or basins, and said designations be made available to local governmental bodies and agencies therein.
2. Encourage agencies formed for the conservation, development, and utilization of waters in Colorado, and especially assist same in their efforts, including the construction of conservation projects.

DEPARTMENT OF REGULATORY AGENCIES

Public Utilities Commission

- Organic Statute:
 1. Statutory Citation: C.R.S. 115-1 through 14, 1963 (as amended)
 2. Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Divisions Within Office/Department: None

Powers/Duties

A. Service and Equipment—Article 4

1. Determine and prescribe the manner and particular point of crossing at which track or other public utility facilities may be constructed across other similar facilities or public highways, and where highways or other utility facilities may cut across tracks. 115-4-6(2) (a) (1969 Supp.)
2. New Construction Extension Suspension—Article 5
 1. Issue certificates to public utilities for construction of a new facility, plant, or system based on proof of present or future public convenience and necessity. Such certificate is not required if the expansion is into a contiguous area or in the ordinary course of business. 115-5-1(1)

Real Estate Commission

- Organic Statute:
 1. Statutory Citation: C.R.S. 117-1-2, 1963 (as amended)
 2. Legislative Declaration of Policy: None
- Geographic Area: Statewide
- Divisions Within Office: None
- Responsibilities: Regulation of real estate transactions and the licensing of business and individuals engaged therein.
- Powers/Duties:
 1. Licensing of real estate brokers and salesmen. 117-1-5
 2. Registration of subdivision developers. 118-16-1 through 7 (as amended)

LOCAL GOVERNMENT AGENCIES

Board of County Commissioners

- Organic Statute:

- 6 Rule making for the Division of Water Resources
 - 7 General supervisory control over management records and distribution of public waters of the state.
 - 8 Snowfall and prediction of probable runoff
 - 9 Making and implementing contracts necessary or incident to the operation of a division
 - 10 Any acts, including rule making powers, which are necessary to effectuate the performance of his duties
- C May delegate his obligation to any person
- D Assist other state officers and employees with the efficient discharge of their duties
- E Assign location and duties of division employees utilizing full final and complete authority over said employees for the discharge of the functions under his authority
- F Provide educational opportunities and experiences for employees
- G Be subject to the direction of the Executive Director of the Department of Natural Resources with respect to those matters concerning the Division of Water Resources which require coordination with other branches of the Department of Natural Resources
- H Report to the Executive Director of the Department of Natural Resources as the Executive Director may require
- I Direct the collection and study of water supply data regarding both surface and ground water in order to make a more efficient administration of the uses thereof
- Comment: The duties as outlined above indicate the broad range of administrative powers and authority held by the State Engineer. This general administrative framework is supplemented by more specific provisions throughout the various articles under Chapter 148 concerning Water Rights and Irrigation.

Soil Conservation Board

- Organic Statute
- A Statutory Citation C.R.S. 128-1-1 1963 (as amended)

- 8 Legislative Declaration of Policy To establish a constructive method of land use providing for the conservation and preservation of natural resources including adequate underground water reserves the control of wind and water erosion and the reduction of damage resulting from floods.
- Geographic Area State-wide
 - Divisions Within Department Office None
 - Responsibilities: Conservation and preservation of natural resources through a constructive method of land use
 - Powers/Duties:
 - A Promote and assist in the organization of soil conservation districts and evaluate petitions for the same in any section of the state where erosion damage exists or is threatened
 - B Act in an advisory capacity with the Board of Supervisors of each district and coordinate the programs of all soil conservation districts
 - C Undertake studies of watershed planning and develop watershed flood prevention and underground storage
 - D Plan watershed improvement underground water storage flood prevention projects and conservation and erosion control practices
 - E Additional Comments: The statute also provides for the creation of local district boards and their powers as follows
 - A Conduct surveys etc. relating to soils and water conservation
 - B Prepare a plan for the care treatment and operation of lands within the district. The district program and plan or work shall establish general objectives and serve as a work guide
 - C May establish a land use ordinance for the district and levy a tax if the same is essential for the care of district lands

Water Conservation Board

- Organic Statute
- A Statutory Citation C.R.S. 149-1-1 1963 (as amended)
- B Legislative Declaration of Policy Aid in the protection and

County Planning Commission

- Organic Statute
 - A. Statutory Citation C.R.S. 106-2-1, 1963 (as amended)
 - B. Legislative Declaration of Policy: None
- General Concerns:
 - A. Master Plan

It shall be the function and duty of the County Planning Commission to make and adopt a master plan for the physical development of the unincorporated territory of the county 106-2-5 (1963)

Detailed instructions as to the content of a master plan are found in 106-2-5(3). Generally, the plan embodies the Planning Commission's recommendations as to such things as streets, playgrounds, airports, utilities, housing developments, flood control, and land classification.
 - B. Zoning Plan

The County Planning Commission shall make a zoning plan or plans for zoning all or any part of the unincorporated territory within such county 106-2-10. Said plan shall then be certified to the Board of County Commissioners for public hearings and formal resolution. 106-2-11
 - C. Subdivision Regulations

Every County Planning Commission in the state shall develop subdivision regulations for all land within the unincorporated areas of the county not later than July 1, 1971. 106-2-34 (1971 Supp.) (For content of said regulations, note the subdivision regulation section under the Board of County Commissioners outline.)

Regional Health Department

- Organic Statute
 - A. Statutory Citation C.R.S. 66-37-1 (1971 Session Laws)
 - B. Declaration of Legislative Intent: Provide a more effective, efficient and expanded local community health service, ensuring local participation. (Note: Formed by one or more local health departments.)

- Geographic Area: Designated regions and extending over all unincorporated areas and municipal corporations within said regions 66-37-5 (1971 Session Laws)

- Divisions Within Department/Office: None

- Powers/Centralis:

- A. Enforce laws regarding air and water pollution controls 66-37-8(1) (b) (1971 Session Laws)
- B. Initiate and carry out health programs that may be deemed necessary and desirable for the protection of public health 66-37-8(2) (e) (1971 Session Laws)
- C. Require a septic tank construction and use permit prior to installation and operation 66-37-18 (1971 Session Laws)
- D. Adopt uniform administrative rules and minimum construction standards for septic tank installation upon which certificates of construction shall be based. Said standards shall be no less stringent than the U.S. Department of Health, Education, and Welfare criteria 66-37-19(b) (1971 Session Laws)

- A. Statutory Citation: C.R.S. 106-2-1, 1963 (as amended)
- B. Declaration of Legislative Intent: The board is authorized to provide for the physical development of the unincorporated territory within the county and for the zoning of all or any part of such territory.

General Concerns

A. Master Plan:

The Board of County Commissioners shall receive from the Planning Commission a certified copy of the master plan as developed and adopted by the commission. 106-2-8 (1963)

B. Zoning Plan:

The Board of County Commissioners may adopt, by resolution, a zoning plan after certification of said plan by the County Planning Commission to the board. The zoning plan shall include a full text of the zoning resolution and applicable maps. Said plan, which shall indicate zoning for all or any part of the unincorporated territory within the county, may regulate land use districts by type of use and size of improvements. 106-2-10, -11, -12 (1967 Supp.)

Zoning regulations may be enforced by the Board of County Commissioners by withholding building permits and for such purposes may establish the position of County Building Inspector. 106-2-13 (1963)

The Board of County Commissioners may amend the zoning resolution after soliciting comments from the Planning Commission and complying with Public Notice and Hearing Requirements. 106-2-15 (1963)

C. Subdivision Regulations:

The Board of County Commissioners shall adopt and enforce subdivision regulations for all land within the unincorporated areas of the county not later than July 1, 1972. Responsibility for the development of subdivision regulations rests with the County Planning Commission. 106-2-3, 971 Supp.)

Items which must be included in such regulations include the following:

- 1. Property survey and ownership.

- 2. Site characteristics and analysis, including streams, lakes, topography, geology, soils, and vegetation
- 3. A plat showing the layout or plan of development.

Other minimum provisions of the regulations include:

- 1. Subdivision regulations adopted by a county planning commission pursuant to this section shall include as a minimum, provisions governing the following:
 - a. Requirements for suitable areas of recreation, school utilities, or other necessary public services.
 - b. Standards and technical procedures applicable to storm drainage plans and related designs, in order to ensure proper drainage ways.
 - c. Standards and technical procedures applicable to sanitary sewer plans and designs, including soil percolation testing and required percolation rates and site design standards for on-lot sewage disposal systems when applicable.
 - d. Standards and technical procedures applicable to water systems.

County and District Health Departments

Organic Statute:

- A. Statutory Citation: C.R.S. 66-21-1 through -16 1963 (as amended)
- B. Legislative Declaration of Policy: None

Powers/Duties (local boards of health):

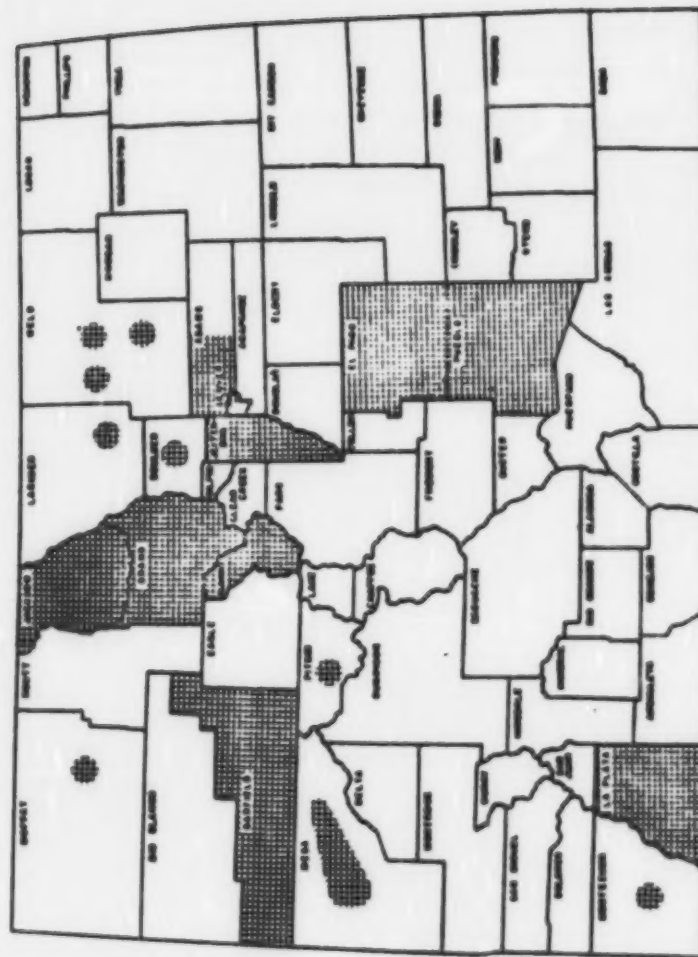
- A. Administer and enforce laws pertaining to Public Health and rules and regulations of the State Board of Health. 66-2-6(2)
- B. Select areas after holding public hearings when the Board of Health will elect to exercise local governmental control and supervision over the location, construction, remodeling, installation, and use of septic tanks and other nonmunicipal waste disposal systems, and to adopt rules and minimum standards pertaining thereto. 66-2-7 (1965 Supp.)
- C. Require a septic tank construction and use permit prior to installation and operation. 66-2-16 (1965 Supp.)

LAND USE PLANNING IN COLORADO COUNTIES

A measure of current planning activity is indicated by the fact that only nine of the forty-three counties in the state have land use planning covering the entire unincorporated areas; another ten have portions of the county planned, usually adjacent to cities and towns and developed as an adjunct to a municipal plan.

LEGEND

■ COUNTIES WHICH HAVE A COMPREHENSIVE PLAN



■ COUNTIES WHICH HAVE A COMPREHENSIVE PLAN

ZONING IN COLORADO COUNTIES

Gaps currently exist in the coverage and type of zoning in Colorado counties. Twenty counties have countywide zoning (only four of these have adopted plans for the entire county). Twelve other counties have zoned portions of their area of these four have done so without the benefit of adopted plans for the zoned area.

An investigation of zoning practices reveals that thirty-two of Colorado's counties presently have adopted zoning regulations and some seventeen others have such regulations in the process of completion.

FIGURE 1

LEGEND

□ COUNTIES WHICH ARE ZONED OR PARTIALLY ZONED

COLORADO COUNTIES
WHICH ARE ZONED OR PARTIALLY ZONED

FIGURE 2 COUNTIES WHICH HAVE A COUNTYWIDE ZONING PLAN

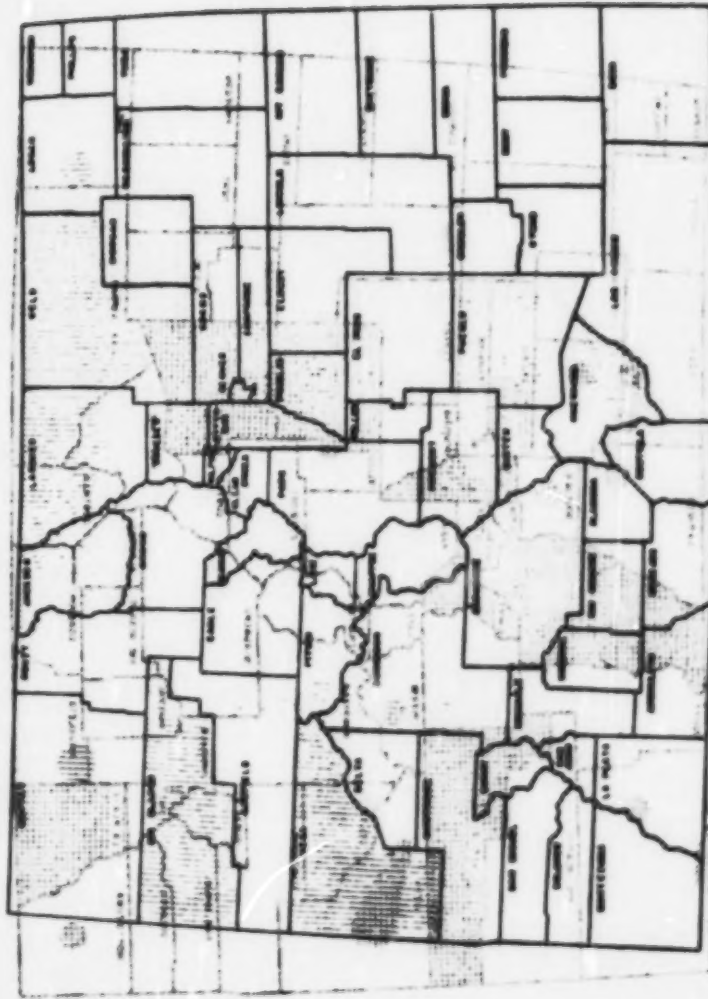


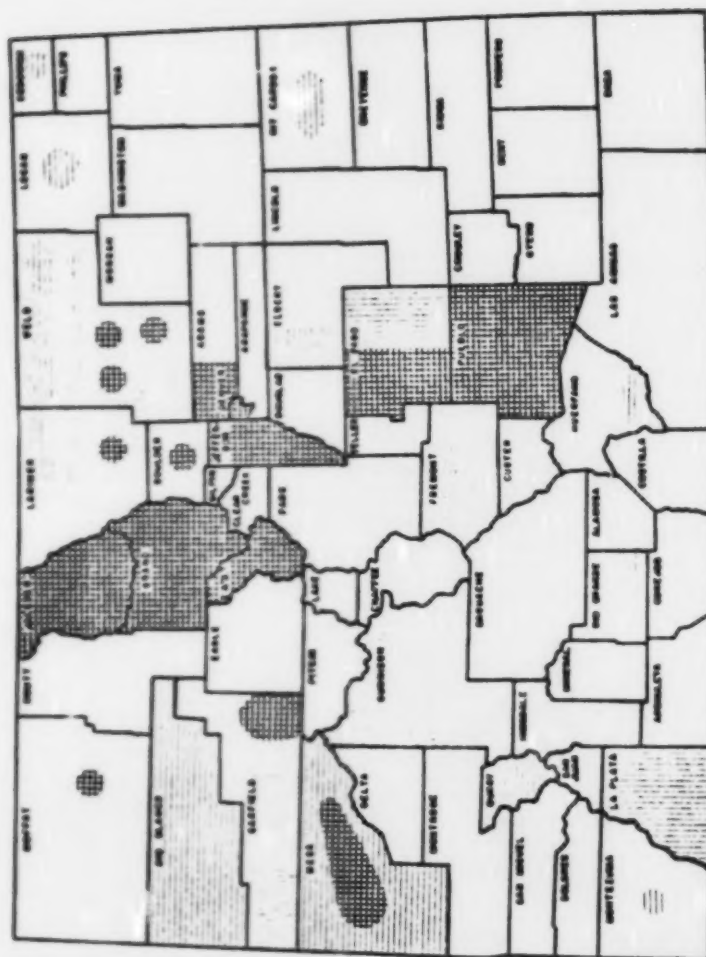
FIGURE 3 COUNTIES WHICH ARE ZONED OR PARTIALLY ZONED

COUNTIES WITH A PLAN AND/OR ZONING

At present only fifteen counties have adopted plans, most of which have been developed subsequent in time to zoning. A majority of the counties have adopted zoning as a regulatory device by designating all or much of the county as agricultural or forestry zone with development review appearing in the form of rezoning requests. This practice allows the county administration some control over land use, but it cannot be construed as planning.

LEGEND

- ☐ COUNTIES WHICH HAVE A PLAN
- ☐ COUNTIES WHICH HAVE ZONING
- ☒ COUNTIES WHICH HAVE BOTH A PLAN AND ZONING



COUNTIES WHICH HAVE A PLAN AND/OR ZONING

- ☐ PLAN
- ☒ ZONING
- ☒ BOTH

CHAPTER II. MONTANA

1. General

a. Montana is the largest state in Region VIII, and the fourth largest in the nation. Over the years, Montana has shown very little growth. Like Colorado and Wyoming, Montana has two major geographic regions, the Rocky Mountains in the western half and the Great Plains in the eastern half. Unlike these other states, urbanization is occurring in the mountainous region itself, and not along the front range. Montana land traditionally has been used for agriculture, timber production, and some mining. The current trend is towards more land being used for urban purposes, recreation, and mineral extraction. Pressures to develop the land are becoming more apparent than ever before. The federal government, recreational land speculators, and other outside pressures are forcing development on Montana's rural and unspoiled lands.

b. Montana's remote location, lack of investment capital, and bad climatic reputation no longer can spare its natural resources from accelerated exploitation. Resource depletion in other parts of the country or the world will force development of reserves heretofore deemed uneconomical or undesirable.¹³

¹³John M. Crowley, Environmental Regions of Montana. (Montana Environmental Quality Council), June 1972, p.49.

2. Land-Use Laws

a. Montana is the only state in Region VIII with an Environmental Policy Act in force. The Montana Environmental Policy Act (MEPA) is modeled after the National Environmental Policy Act. The Montana Environmental Quality Council was created under MEPA in July 1971. Much of the information for the land-use report on Montana is drawn from the first environmental status report by the Environmental Quality Council. As with NEPA, the Montana Environmental Policy Act requires state agencies to write environmental impact statements on projects and actions that have environmental impact. These are reviewed by other agencies and the Environmental Quality Council. The effects this review process can have on land-use is essentially the same as that which takes place for Federal agencies under NEPA. The land-use implications of federal impact statement review are covered extensively in Part I of the land-use report. The Montana Environmental Policy Act is a positive tool for bringing about wise land-use for environmental protection. There is a need for such a tool in the other five states of Region VIII.

b. Another, more explicit, land-use law is the Montana Floodway Management and Regulation Act, which became effective on July 1, 1971. If properly administered, it will be an effective tool for flood plain regulation, and a piece of model legislation for other states in Region VIII. The Act directs the Montana Water Resources Board to develop and provide information

to local governments, identifying lands which are unsuited for certain development purposes because of flood hazard. Once these areas of the state are delineated, the Water Resources Board must draw up flood plain regulations. If the local governments do not adopt these land-use regulations, the state is empowered to enforce its own:

If within one (1) year from the date of transmittal of the flood-plain information to officials of the political subdivisions, any political subdivision has failed to adopt land-use regulations which meet or exceed the minimum standards of the board, the designated floodway shall be enforced and no artificial obstruction or nonconforming use shall be established by any person within the floodway-encroachment lines for such a fifty-year flood as established by the board under subsection (2) of this section, unless specifically authorized by the board.¹⁴

The Water Resources Board has completed floodway studies in five areas, and expects to publish draft regulations in the spring of 1973. The regulations are subject to public hearings, and an environmental impact statement must be written under MEPA.

b. Under present zoning laws, there is some question whether counties will be able to promulgate flood plain regulations within the one year time limit. This may necessitate a change in the state zoning laws or require state enforcement of flood plain regulations. Municipalities will be able to adopt regulations much easier than will counties under the present zoning laws. Great Falls, Montana already has flood

¹⁴Section 89-3504(3) of Montana Floodway Management and Regulation Act.

plain regulations.

c. A copy of the Montana Floodway Management and Regulation Act is included as an appendix to this Montana land-use report.

3. Water Resources

a. Montana is the only state in Region VIII that does not have centralized state control of water rights. Each county judicial system (there are 56 counties) handles its own water rights. The confusion this causes is phenomenal. At one time, all the western states used this system, but the other states have long since abandoned it. Montana counties have divided and subdivided since 1865, and the water records often were not transferred accordingly. In addition, many streams flow through more than one county. Not only is it difficult to identify who owns the water rights within a county, but it is nearly impossible to determine ownership on a river that flows through several counties. Less than half the counties comply with state law by sending copies of new water transactions to the state Water Resources Division. Without good records, it is difficult to formulate a state water plan, which is also required by law.

b. Under the Montana Water Resources Act of 1967, the state Water Resources Division was charged with development of a State Water Plan and promulgation of regulations to effect the purposes of the Act, which include the optimum beneficial use of

water, no waste of water resources, the use of water for maximum social and economic prosperity, and the protection of water supplies for public recreational uses and for the conservation of wildlife and aquatic life. In the five years since passage, no regulations have been adopted under the Act. Moreover, the required water plan only now is being completed. This extreme bureaucratic lag has allowed numerous federal water projects to preempt state water needs.¹⁵

c. There is a great need for a centralized system for the granting of water rights in Montana. The confusion caused by the present system makes it impossible to intelligently plan for the water needs of the state. Since water is usually a determinant of land use in the west, this confusion also makes comprehensive land-use planning very difficult.

4. Powder River Basin Coal Development

a. When asked to identify the major land-use problems of Montana, most environmental groups and state agencies named the Powder River coal development as a primary concern. The Bureau of Land Management owns 80% of the mineral rights in the basin, so the development is discussed extensively in the BLM section of this land-use report.

b. The impact of this coal development will be especially great for Montana, which is characterized by a sluggish economy,

¹⁵ Montana Environmental Quality Council, State Agency Programs and Activities. July 1972. p.26.

a slow rate of growth, and an agrarian society. Thomas Gill describes the socio-economic and the land-use impact in the Montana Environmental Quality Council report:

"The increased tax base is often temporary in the case of coal mining and coal-related industry. Unless reclamation is unusually successful and the land is restored to a productive condition, strip mining destroys the tax base. When the coal is depleted and the power companies move their plants closer to new fuel supplies, spoil banks have little tax value. The present standard of living in the Appalachian coal fields demonstrates the long-range economic impact of indiscriminate mining. The coal and power companies have departed, leaving the people with no jobs and the government with nothing to tax. As the coal reserves in Montana are exhausted, a similar situation would almost certainly develop if the long-range consequences are not anticipated and appropriate solutions incorporated into comprehensive planning."¹⁶

Mr. Gill goes on to say, "Above all, if the planning efforts of Montana and other coal reserve states are to have any hope of success, the most imperative need is for a national energy policy and a national program for moderating energy consumption by encouraging conservative rather than maximum energy use."¹⁷

c. In addition to land consumption of strip mining, the planned power generation and coal gasification plants could consume up to 75% of the available water supply in the Powder River basin. Competition for the remaining water could become intense as these industries expand. The coal development would

¹⁶Thomas J. Gill, Coal Development Potential in Eastern Montana (Montana Environmental Quality Council) p. 16.

¹⁷Ibid. p. 19.

preclude any further irrigation projects and seriously diminish the recreational value of the Yellowstone River. It also might cut short the domestic supplies needed by accompanying population increases.

d. The effect of the proposed coal-fired power generation facilities on air quality can best be illustrated by comparing them with an existing facility. The 2,075 megawatt Four Corners plant in New Mexico is equipped with scrubbers and electrostatic precipitators. This plant still emits 465 tons of particulates each day, and has a plume of pollution traceable to the plant as far as 140 miles away. Several of the Powder River basin plants proposed for Montana are 2½ to 5 times as large as the Four Corners plant.¹⁸

5. Other Mineral Development

a. The State of Montana is rich in minerals, but very few of them have been developed. The mineral industry in Montana depends on price and demand, rather than the presence of the raw material. Distance from markets or limited markets have prohibited development of many Montana minerals, including iron, tungsten, manganese, asbestos, bentonite, gypsum, chromite, and phosphate.

b. Montana has 80% of the total U.S. chromite reserves. These have not been developed because at present, the price

¹⁸Ibid. p. 11

of domestic chromite cannot compete with that of imported chromite. Total Montana phosphate reserves are estimated to be in excess of 24 billion tons. The Institute of Ecology indicates that if present trends continue, all known phosphate reserves will be exhausted by the end of the 21st century. As the supply of this important agricultural product dwindles in other regions, Montana's reserves will become increasingly important.

c. Copper deposits are scattered throughout Rocky Mountain Montana, but 99% of the present production comes from the Butte district. Copper has been mined for 90 years at Butte, and total reserves are estimated to be more than 9 million tons.¹⁹ The copper industry has always presented serious air quality problems from the smelting process.

d. Coal is being strip mined on an Indian reservation in eastern Montana. Since the Bureau of Indian Affairs is involved, some believe that the BIA is breaking the law by not filing an environmental impact statement. The situation is a complex one, since the lands in question are Indian-owned and held in trust by the U.S. Government. The Indians have the authority to lease such lands, with approval from the Bureau of Indian Affairs. Since the leasing is Indian-initiated, the BIA reasons that such leasing is not a governmental action, and thus, that it is not covered by the

¹⁹John M. Crowley, Environmental Regions of Montana (Montana Environmental Quality Council) p.32.

National Environmental Policy Act. This is also apparently the intent of Congress, because an amendment to the Indian Affairs Act concerning this was passed after NEPA. The amendment states that before the Bureau of Indian Affairs approves a lease on Indian trust land, the Secretary of Interior must satisfy himself that the environment will be adequately protected. The question that must be asked is this: How can the Secretary of Interior determine the environmental impact, if an impact statement is not written and no comments are received from other agencies? The Bureau of Indian Affairs excuses itself from an impact statement under NEPA; yet, the amendment to the Indian Affairs Act seems to indicate that one should be written if the Secretary of Interior is to determine environmental impact.

6. Timber Production

a. Montana is the most productive timber state in Region VIII. There are some 8 million acres of sawtimber and more than 6 million acres of commercial pole timber. About 68 percent of this is on federal land.²⁰ Lumber and wood products account for more income to the state than any other activity.

b. Timber stand improvement practices such as thinning, pruning, and harvesting are not carried out on 41 percent of the commercial forests in the state. When these practices are implemented, they produce more and higher quality wood

²⁰Ibid. p. 42.

on a given land area. Under intensive management, the needs for wood products could be met using a much smaller acreage for timber cutting. Under the present economic situation, however, it is cheaper to cut extensive tracts of forest land than it is to manage a smaller area for timber production.

c. Cutting over and beyond a sustained-yield cut takes place near many communities supported by sawmills. Large tracts of commercial forest land denuded by fire and timber harvest in the last several decades remain unstocked.

d. Because of the magnitude of the forest products industry in Montana, air pollution from teepee burners and on-site slash burning is a major consideration in maintaining air quality. Most of the slash burning takes place on federal property (Forest Service land). Other methods of slash disposal are available, and the EPA should encourage the Forest Service to explore alternative slash disposal methods, despite their higher cost.

7. Outdoor Recreation

a. Recreational opportunities in Montana are concentrated in the mountainous western half of the state. At present, Montana has 26 ski areas, two national parks, and 43 state parks. The nationwide demand for outdoor recreation is expected to triple by the year 2000. Because Montana is one of the few remaining states containing significant amounts

of relatively unspoiled land, demand by both residents and non-residents will probably increase at an even more rapid rate. It is anticipated that Rocky Mountain Montana will become increasingly attractive for retirement and vacation homes. This is already indicated by the increasing population in the area and the flurry of real-estate activity. All too often these mountain homes are equipped with septic tanks. The thin soil and fractured bedrock in the mountains causes these septic systems to contaminate groundwater drinking supplies. The authority of the state Health Department is very limited in this respect.

b. The most controversial recreational development in Montana is the Big Sky development near Bozeman. Big Sky Corporation is a subsidiary of Chrysler Corporation. About 9,000 acres will be involved in a huge land sale and development project. Two major villages will be built. Both will include vacation homesites, condominiums, restaurants, hotels, and the like. The summer village will include an 18 hole golf course, horseback riding, swimming, and an extensive trail system. The winter village, four miles away, will be a ski resort similar to Vail, Colorado. Two mountains will be dissected with ski trails and lifts to accomodate the expected influx of skiers. In short, Big Sky is the ultimate in mechanized, urbanized outdoor recreation.

1. Opponents of the project have sought several means of stopping Big Sky, but they have not succeeded so far.

Ten miles of improved road is needed to link the two villages to a main highway. Big Sky is depending on the State Highway Department to build it. Opponents have filed suit against the federal Secretary of Transportation, contending that public funds should not be expended on the project. Another suit has been filed against the Forest Service to block a land exchange at the base of the mountain which Big Sky needs to develop its skiing village. Despite the suits, Big Sky Corporation is going ahead as planned, confident that the development is inevitable.

2. Looking into the future of Big Sky, environmentalists are trying to have the present Spanish Peak Wilderness Area enlarged to prevent extension of the Big Sky road over the divide and into the town of Ennis, Montana. The land in question is eligible for wilderness classification. Official designation as a wilderness area would effectively block access to Big Sky from the west, and would tend to limit its development. Metcalf is introducing a bill to bring about the needed enlargement of the Spanish Peaks Wilderness Area.

3. It is unfortunate that the State of Montana is promoting the Big Sky development. Big Sky was the highest priority of the Montana Department of Planning and Economic Development in 1971, taking precedence over the revision of state planning laws, assistance to local comprehensive planning

and state planning activities.²¹

c. The national Wilderness Preservation Act is taking on particular significance in Montana. About 1.5 million acres in Montana's eleven national forests have been classified as wilderness and are part of the National Wilderness Preservation System. An additional 420,000 acres are under immediate consideration for inclusion, and numerous other Montana wildlands are qualified.

d. The Montana Stream Preservation Act outlines the policy of the state to preserve natural stream conditions except where necessary or appropriate after consideration of all factors involved. It requires state agencies to submit proposed alteration plans to the Montana Department of Game and Fish for recommendations and arbitration if necessary. This is a powerful tool in dealing with agencies like the State Highway Department. Still, the exemptions to the Act are of major importance. Neither irrigation projects nor private individuals are subject to review under the Stream Preservation Act.²²

e. Several major Montana lakes are becoming eutrophied because of recreational development. On Flathead Lake, dredging and filling operations to create more shoreline are encroaching upon the lake and causing local turbidity problems. The Army Corps of Engineers does not consider itself responsible

²¹Montana Environmental Quality Council, State Agency Programs and Activities (July 1972); p. 24.

²²Ibid. p. 33.

for issuing permits for these operations because, according to the Corps, Flathead Lake is not a navigable waterway.²³

f. Georgetown Lake is very shallow and has a chronic eutrophication problem. This is aggravated by improperly designed septic facilities of lakeshore residences, pushing of fills into the lake to extend cabin sites, and bank erosion accelerated by waves from power boats. Tests conducted by the EPA during the winter, 1970-1971, showed that below 15 feet the lake was completely devoid of oxygen.²⁴

8. Agriculture

a. Agriculture presently consumes more water through irrigation than any other activity in the state. Montana agriculture is overproductive for the present markets. Farmers depend heavily on government price controls to maintain an acceptable income. It is expected that the amount of land in cultivation will continue to decrease in response to overproduction. However, the state's most productive agricultural lands should be reserved from competing use to keep long-term options open. Agricultural concerns are already experiencing problems with urban sprawl into prime agricultural land. This is best exemplified in the Yellowstone and Gallatin valleys where uncontrolled subdivision brings temporary wealth to farmers in exchange for permanent loss of agricultural land.

²³Loren L. Bahls, Eutrophication in Three Western Montana Lakes (Montana Environmental Quality Council); July 1972, p. 4.

²⁴Ibid. p. 5.

b. Under the 1969 Montana Conservation Districts law, districts can formulate land-use regulations for the conservation of soil and water resources and the prevention and control of erosion. Erosion is the leading source of nonpoint pollution in Region VIII. Though they have been given the authority, Montana conservation districts have not followed the petition, hearing and voting process required to promulgate land-use regulations. This is probably due both to the complexity of the process and a general mistrust of land-use regulations or control in Montana.

9. Urbanization

a. The 1970 Montana census showed only a 3 percent increase in population over 1960. However, the cities of Billings and Great Falls accounted for 85 percent of that increase. Extensive subdivision development is now occurring near Bozeman.

b. The Department of Planning and Economic Development is promoting county-wide subdivision regulations and is drafting model subdivision regulations in response to this suburban growth. Most counties have not adopted regulations thus far.

c. The Montana Department of Health has almost no power to regulate subdivisions, even to insure adequate water and sewage facilities. The authority given the Health Department is so full of loopholes that it is highly unlikely that the Health Department can get accurate information on a given subdivision. There is a need for revision of the Montana statutes in this respect.

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APPENDIX

Montana Floodway Management and Regulation Act
(Effective July 1, 1971)

CHAPTER 35—FLOODWAY MANAGEMENT AND REGULATION

- Section 89-3501. Findings.
89-3502. Policy and purposes.
89-3503. Definitions.
89-3504. Program for delineation of floodways—floodway-encroachment lines—land-use regulations.
89-3505. Artificial obstructions and nonconforming uses as nuisances.
89-3506. Establishment of artificial obstructions or nonconforming uses unlawful—permitted open space uses—prohibited nonconforming uses.
89-3507. Permits for obstructions—application—factors considered—fees.
89-3508. Powers and duties of board relative to obstructions.
89-3509. Authority to enter and investigate lands or waters.
89-3510. Obstructions exempt where drainage area is small.
89-3511. Orders and rules—judicial remedy.
89-3512. Floodway obstruction removal fund.
89-3513. Penalties for violation.
89-3514. Permit construed as added requirement—exception—immunity.
89-3515. Remedies not exclusive.

89-3501. Findings. The people of the state of Montana find that recurrent flooding of a portion of the state's land resources causes loss of life, damage to property, disruption of commerce and governmental services, and unsanitary conditions; all of which are detrimental to the health, safety, welfare and property of the occupants of flooded lands and the people of this state, and that the public interest necessitates management and regulation of flood-prone lands and waters in a manner consistent with sound land and water use management practices which will prevent and alleviate flooding threats to life and health and reduce private and public economic losses.

History: En. Sec. 1, Ch. 393, L. 1971.

Title of Act

An act relating to management and regulation of the floodways of watercourses as prescribed; to define terms; to

provide for certain duties and powers of the Montana water resources board as prescribed; to provide for a floodway obstruction removal fund; to declare certain acts unlawful; and to provide for penalties.

89-3502. Policy and purposes. The policy and purposes of this act are to guide development of the floodway areas of this state consistent with the enumerated findings; to recognize the right and need of watercourses to periodically carry more than the normal flow of water; to

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provide state co-ordination and technical assistance to local units in management of floodway areas; to co-ordinate federal, state and local management activities for floodway areas; to encourage local governmental units to manage flood-prone lands including the adoption, enforcement and administration of land-use regulations and to provide the Montana water resources board with authority necessary to carry out a comprehensive floodway management program for the state.

Specifically, it is the purpose of this act to:

- (1) restrict or prohibit uses which are dangerous to health, safety of property in times of flood or cause increased flood heights or velocities;
- (2) require that uses vulnerable to floods, including public facilities which serve such uses, be provided with flood protection at the time of initial construction;
- (3) develop and provide information to identify lands which are unsuited for certain development purposes because of flood hazard.

History: En. Sec. 2, Ch. 393, L. 1971.

89-3503. Definitions. As used in this act, unless the context otherwise requires:

- (1) "A flood of fifty-year frequency" shall mean a flood magnitude expected to recur on the average of once every fifty (50) years, or a flood magnitude which has a two per cent (2%) chance of occurring in any given year;
- (2) "Artificial obstruction" shall mean any obstruction which is not a natural obstruction;
- (3) "Channel" shall mean the geographical area within either the natural or artificial banks of a watercourse or drainway;
- (4) "Board" shall mean the Montana water resources board;
- (5) "Designated floodway" shall mean a floodway whose limits have been designated and established by order of the board.
- (6) "Drainway" shall mean any depression two (2) feet or more below the surrounding land serving to give direction to a current of water less than nine (9) months of the year, having a bed and well-defined banks; provided, that in the event of doubt as to whether a depression is a watercourse or drainway, it shall be presumed to be a watercourse;
- (7) "Flood" shall mean the water of any watercourse or drainway which is above the bank or outside the channel and banks of such watercourse or drainway;
- (8) "Floodway" shall mean the channel of a watercourse or drainway and those portions of the floodplain adjoining the channel which are reasonably required to carry and discharge the flood water of any watercourse or drainway;
- (9) "Floodway-encroachment lines" shall mean the lines limiting a designated floodway;
- (10) "Floodplain" shall mean the area adjoining the watercourse or drainway which has been or may hereafter be covered by flood water;

- (11) "Establish" shall mean construct, place, insert, or excavate;
- (12) "Natural obstruction" shall mean any rock, tree, gravel, or analogous natural matter that is an obstruction and has been located within the floodway by a nonhuman cause;
- (13) "Obstruction" shall mean any dam, wall, riprap, embankment, levee, dike, pile, abutment, projection, revetment, excavation, channel rectification, bridge, conduit, culvert, building, refuse, automobile body, fill, or other analogous structure or matter in, along, across, or projecting into any floodway which may impede, retard or change the direction of the flow of water, either in itself or by catching or collecting debris carried by such water, or that is placed where the natural flow of the water would carry the same downstream to the damage or detriment of either life or property;
- (14) "Owner" shall mean any person who has dominion over, control of, or title to an obstruction;
- (15) "Political subdivision" shall mean any incorporated city or town or any county organized and having authority to adopt and enforce land-use regulations; and
- (16) "Watercourse" shall mean any depression two (2) feet or more below the surrounding land serving to give direction to a current of water at least nine (9) months of the year, having a bed and well-defined banks; provided, that it shall, upon order of the board, also include any particular depression which would not otherwise be within the definition of watercourse.

History: En. Sec. 3, Ch. 393, L. 1971.

89-3504. Program for delineation of floodways — floodway-encroachment lines—land-use regulations. (1) The board shall initiate a comprehensive program for the delineation of designated floodways for every watercourse and drainway in the state. It shall make a study relating to the acquiring of flood data, and have authority to enter into arrangements with the United States geological survey, the United States army corps of engineers or any other state or federal agency for such acquisition.

(2) When sufficient data have been acquired to reasonably locate the floodway of a flood of fifty-year frequency, the board shall establish, by order, after a public hearing, floodway-encroachment lines for such a floodway within which a political subdivision may establish land-use regulation. The board shall furnish such data to officials of the political subdivision having jurisdiction over such areas together with a map outlining the areas involved, a copy of this act, adopted rules and regulations of the board, and suggested minimum standards. These standards, rules and regulations shall reflect gradations in flood hazard based on flood frequency and other criteria as outlined in subsection (2) of section 7 [89-3507 (2)] of this act. The location of the encroachment lines shall be the estimated outer boundary of the floodway of fifty-year frequency flood, as determined from the available data. The board shall record all floodway-encroachment lines established by it in the office of the county clerk and recorder of each county in which such lines are found. The

board shall have the power to alter such lines at any later time, by order, after a public hearing if a re-evaluation of the then available flood data warrants it. Notice of any such hearing or order of the board establishing or altering any such line shall be given by publishing such notice once each week for three consecutive weeks in a legal newspaper published or of general circulation in the area involved, the last publication of which shall be not less than ten (10) days prior to the date set for the hearing or the effective date of such order.

(3) If within one (1) year from the date of transmittal of the flood-plain information to officials of the political subdivisions, any political subdivision has failed to adopt land-use regulations which meet or exceed the minimum standards of the board, the designated floodway shall be enforced and no artificial obstruction or nonconforming use shall be established by any person within the floodway-encroachment lines for such a fifty-year flood as established by the board under subsection (2) of this section, unless specifically authorized by the board.

History: En. Sec. 4, Ch. 393, L. 1971.

89-3505. Artificial obstructions and nonconforming uses as nuisances. Any artificial obstruction or nonconforming use in any designated floodway enforced under subsection (3) of section 4 [89-3504 (3)] of this act and not exempt under section 6 [89-3506] of this act is hereby declared to be a public nuisance unless a permit has been obtained for such artificial obstruction or nonconforming use from the board.

History: En. Sec. 5, Ch. 393, L. 1971.

89-3506. Establishment of artificial obstructions or nonconforming uses unlawful—permitted open space uses—prohibited nonconforming uses. (1) It shall be unlawful for a person to establish any artificial obstruction or nonconforming use within a designated floodway, or (2) for any owner to permit any artificial obstruction to remain within a designated floodway without a permit from the board. This act shall not affect any existing artificial obstruction or nonconforming use established in the floodway prior to the effective date of this act and before the board has enforced a designated floodway under subsection (3) of section 4 [89-3504 (3)] of this act; provided, that no person shall make nor shall any owner allow alterations of any artificial obstruction within a designated floodway whether the obstruction proposed for alteration was located in the floodway before or after the effective date of this act except upon express written approval of the board. Maintenance of an obstruction shall not be construed to be an alteration.

(2) The following open space uses shall be permitted within the designated floodway, to the extent that they are not prohibited by any other ordinance or statute, and provided they do not require structures other than portable structures, fill, or permanent storage of materials or equipment; (a) agricultural uses (b) industrial-commercial uses such as loading areas, parking areas, emergency landing strips (c) private and public recreational uses such as golf courses, tennis courts, driving ranges,

archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife management and natural areas, game farms, fish hatcheries, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, hunting and horseback riding trails (d) forestry, including processing of forest products with portable equipment (e) residential uses such as lawns, gardens, parking areas and play areas (f) excavations subject to the issuance of a permit under section 7 [89-3507].

(3) The following nonconforming uses shall be prohibited within the designated floodways: (a) Any building for living purposes or place of assembly or permanent use by human beings (b) any structure or excavation that will cause water to be diverted from the established floodway, cause erosion, obstruct the natural flow of water, or reduce the carrying capacity of the floodway (c) the construction or permanent storage of any object subject to flotation or movement during flood level periods.

History: En. Sec. 6, Ch. 393, L. 1971.

89-3507. Permits for obstructions—application—factors considered—fees. (1) The board shall have the power to issue permits for the establishment or alteration of obstructions which would otherwise violate section 6 [89-3506] of this act. The application for the permit shall contain such information as the board shall require, including complete maps, plans, profiles and specifications of the obstruction and watercourse or drainway.

(2) In passing upon such application, the board shall consider (a) the danger to life and property by water which may be backed up or diverted by such obstruction, (b) the danger that the obstruction will be swept downstream to the injury of others, (c) the availability of alternate locations, (d) the construction or alteration of the obstruction in such a manner as to lessen the danger, (e) the permanence of the obstruction, (f) the anticipated development in the foreseeable future of the area which may be affected by the obstruction, and (g) such other factors as are in harmony with the purpose of this act. The board may make a part of such permit any reasonable conditions it may deem advisable. In order for the permit to continue to remain in force, the obstruction must be maintained so as to comply with the conditions and specifications of the permit.

(3) Permits for obstructions to be established in the floodway of watercourses must be specifically approved or denied within a reasonable time by the board; permits for obstructions in the floodways or drainways shall be conclusively deemed to have been granted sixty (60) days after the receipt of such application by the board, or after such time as the board shall by rule specify, unless the board notifies the applicant that the permit is denied.

(4) Every application for a permit shall be accompanied by a non-refundable application fee of ten dollars (\$10) which the state treasurer shall credit to the floodway obstruction removal fund.

History: En. Sec. 7, Ch. 393, L. 1971.

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CHAPTER III. WYOMING

1. General

a. To understand Wyoming's position on land-use, it is helpful to know some of the unusual circumstances inherent to the land in the state. The Federal government administers 48 percent of the total surface land in the state. This land is divided between the Forest Service, the Park Service, the BLM, the Bureau of Reclamation, the Bureau of Indian Affairs (Wind River Indian Reservation). The State of Wyoming administers 6 percent of the land through the State Land Board. This is trust land administered for the support of state institutions. The remaining 46 percent of the land is privately owned. Since nearly half of the land in the state is controlled by the Federal government, Wyoming state land-use policies affect only 54 percent of the total land area.

b. The economy of the state is highly dependent on raw materials and natural resources. There is very little manufacturing. In terms of dollar values, mining is the leading industry. It is followed by livestock production, then tourism and recreation.

c. About 80-85 percent of the land in Wyoming is grazed. This includes much of the federal land. Very little land is cultivated.

2. Agriculture

a. In Wyoming, agriculture is almost synonymous with livestock production. There are two kinds of livestock operations in Region VIII, grazing and feedlots. At present, feedlots are of minor importance in Wyoming. However, in the future, more and more feedlots are expected because of the greater efficiency and minimal land area involved. The problems of soil compaction and solid wastes are inherent in such operations. The Wyoming Department of Agriculture, in cooperation with the University Extension and the Department of Health, has drawn up feedlot density and operation guidelines with emphasis on location, ponding, buffer zones, favorable soil, and air pollution. The state has no authority to enforce these or any other feedlot guidelines.

b. By far, the greatest livestock production comes from grazing. Instances of range damage from livestock are fairly common, especially around watering holes and roundup areas. In severe cases, this range damage involves loss of palatable forage and soil erosion. About 75 percent of the rangeland in Wyoming is overgrazed and needs changes in livestock management or more drastic measures.²⁵

c. Most of the land administered by the State Land Board is used for grazing. The land board has more than 3½ million

²⁵State Soil and Water Conservation Needs Committee, Wyoming Conservation Needs Inventory (Casper, Wyoming; June 1970); p. 14.

acres leased for grazing, compared to 9,739 acres for cultivated agriculture.

d. Soil Conservation Districts are an active force in both grazing and cultivated agriculture. These districts are voluntary organizations which are legal entities of the state, much like a fire district. The districts are aided by federal soil conservationists in each district or work unit. About 98 percent of the land area in Wyoming is in a soil conservation district. This includes federal (except the National Parks) and state-owned lands as well as townsites. Not all states in Region VIII include townsites in their districts. By including them, Wyoming districts have been able to have an input on erosion problems caused by urbanization. An important part of the Soil Conservation District function is the preparation of resource inventories. About half the districts in Wyoming have completed them. These inventories outline land ownership, land use, geology, climate, soils, water resources, wildlife and recreation resources, minerals, human resources and industry, and transportation in the district or county. These could and should be used for land planning at the local and, particularly, the county level. The resource inventories are not available for public use in some districts, however. The Region VIII YAB Wyoming representative was refused a copy in the district where he lives, on the grounds that it was "none of his business." On the other hand, some districts are quite willing to share their inventories.

In Wyoming, where land-use planning is almost non-existent, these resource inventories provide a valuable base of information, but only if they are made public.

e. The relatively small area in Wyoming under cultivation includes croplands in silage corn, alfalfa hay, beans, sugar beets, and malting barley. Very little of this land is in the Set-Aside Program of the Agricultural Stabilization and Conservation Service (the Old Soil Bank Program), and the crops being raised are not in surplus.

f. Some of the land brought under dryland cultivation under the Homestead Act was, and still is, unsuitable for cultivation. Soil Conservation Districts often recommend removing such cropland from cultivation and converting it to pasture for livestock after they do a soils inventory of the property. This conversion is, of course, voluntary, but the districts have received good cooperation because economic benefits of conversion can be shown. The Great Plains Program of the Soil Conservation Service is administered through the districts. This program encourages farmers and ranchers to formulate a land-use plan for their property and carry these plans out over a period of years, through providing cost-sharing and technical assistance for this purpose. The net effect of this program is often a conversion of unsuitable cultivated land to grazing land. Statewide, 72,027 acres still need a change in land-use to perennial vegetation.²⁶

²⁶Ibid. p. 10.

g. While some land is taken out of cultivation because of the Soil Conservation Districts, other land is being brought under irrigated cultivation because of farm loan programs in the Wyoming Department of Economic Planning and Development (DEPAD). DEPAD administers \$20,075,000 in farm loans for irrigation facilities. In 1971, these loans were used to develop 5,078 acres of new irrigated land and to improve 2,432 acres of existing irrigation facilities. The DEPAD program is only four years old, so although their impact is relatively minor, they can be expected to have a greater impact in the future.

h. The net effect of the complex interplay of these agencies is a shift in Wyoming agriculture from dryland to irrigated cultivation, and from dryland cultivation to grazing. Considering Region VIII's experience with dryland cultivation and the Dust Bowl of the '30s, this seems to be a desirable shift.

i. The Wyoming Department of Agriculture is doing a comprehensive land capability study on sample plots across the state. These 160-acre plots are carefully analyzed to determine soil, population, cropping patterns, climate, and other factors. This data is put into a computer system called MIADS to try to determine the use capabilities of the plots. It is hoped that a land capability program can be formulated that would apply to general areas of the state.

3. Mineral Extraction

a. Mineral extraction accounts for more revenue to the

state than any other activity. Recent actions by the Bureau of Land Management concerning coal leases are having quite an effect on Wyoming. As of March 1971, no new coal leases have been issued by the BLM for federal land. This includes BLM, Forest Service, and Indian Reservation lands, which amount to about half the land area in the state. The Washington office of the BLM is currently reassessing present coal leasing policies, so the only coal lands available in Wyoming for lease are state and private lands.

b. The State Land Board, as of June 30, 1970 had leased over 6 million acres for mineral, oil, and gas extraction. Another large mineral owner is the Union Pacific Railroad. When the state was created, the railroads were given 5,749,000 acres in Wyoming. They sold most of the surface rights, but retained the mineral rights.

c. There is an extensive subbituminous coal deposit in the Powder River Basin in Wyoming. About half the mineral rights belong to the BLM, so their leasing policies will be a determining factor in the development of this vast resource. The biggest problem is one of water availability. Large volumes of water are required for the generation of electric power, coal gasification, and other coal developments proposed for the basin. In most instances, the water is not adjacent to the coal fields, and the moving of water to the coal will require expensive and complicated transportation systems. A more complete description of this nationally significant coal deposit will be found

in the Bureau of Land Management section of this land-use report.

d. Wyoming strip-mining regulations are generally considered among the strongest in the nation. The Open Cut Land Reclamation Act became law in 1969, and it is administered by the State Land Board. The extent to which the law is enforced is open to question, however. Several Wyoming residents have indicated cases of violations which are being overlooked or ignored.

e. Joint research by the State Forest Service and the Mining Reclamation Division of the State Land Board is being conducted concerning the feasibility of using wood wastes from lumber mills as a soil conditioner for strip mined areas. Where this can be carried out, it solves a dual problem: disposition of wood wastes and improved soil structure in strip mined areas. Right now, it is transportation costs that are prohibitive.

f. Strip-mining in Wyoming should be distinguished from that taking place in the East, particularly in Appalachia. Most of the land now being stripped in eastern Wyoming is native shortgrass prairie with rolling topography. There is no destruction of 100 year-old forests or removal of entire mountainsides. Because of Wyoming's semi-arid climate, however, revegetation efforts have been largely unsuccessful. Thus, strip-mining in eastern Wyoming does not create major ecological disaster areas as is the case in the Appalachians. The loss of vegetation and land productivity is a more subtle form of land destruction.

g. The western half of Wyoming is mountainous, forested

country, and is subject to very extensive environmental damage from strip-mining. Since most of the land in western Wyoming is federal property, it will be interesting to see what the BLM finally decides to do about strip-mining. Until then, strip-mining for coal is suspended for most of western Wyoming.

h. In uranium mining areas, a problem has become apparent that is limiting land-usage in specific areas. The problem first became apparent in Grand Junction, Colorado where uranium mine tailings were used as backfill in building construction. These tailings give off a radioactive gas called radon, which penetrates concrete foundations and becomes trapped in closed buildings when the tailings are used for backfill. In an open ore or tailings impoundment, this radon escapes into the atmosphere at safe levels of concentration. Residents of Riverton, Wyoming became very concerned with this, since there are abundant supplies of uranium tailings in the area which might have been used in construction. The AEC ran tests on Riverton and found no unsafe conditions. However, this brought about issuance of an AEC memorandum to the Reclamation Division of the State Land Board. According to the AEC, buildings should never be erected over uranium mine tailings, due to the long radioactive half-lives involved. This means that all present and future tailings impoundments will have to be protected from building development in the future, probably through a stipulation to that effect in the land title.

i. Wyoming can expect increased uranium mining activity

in the future, because of an international trade agreement signed this summer between the U. S. and Japan. The agreement involves the sale to Japan over the next ten years of \$1.8 billion of uranium fuel for 26 Japanese nuclear power plants. Reynolds Aluminum owns some 43,000 acres of land in the Powder River Basin, and plans to build a uranium enrichment plant there, subject to approval by the Atomic Energy Commission. Reynolds plans to strip-mine coal and build a 3,600 megawatt plant to provide electricity for the uranium processing plant. This new development is unquestionably tied to the new Japanese market. Thus, more Wyoming coal will be strip-mined, more uranium tailings will be produced, and more water will be consumed for mineral development.

j. The Atomic Energy Commission and El Paso Natural Gas Company are investigating the possibility of using nuclear stimulation to develop natural gas reserves in the Big Piney/Pinedale area of Wyoming. This project, called Wagon Wheel, is still in the planning stages, since all of the environmental studies have not been completed. There is a great deal of adverse public opinion regarding this project. The DEPAD Mineral Division is promoting this project on the premise that it would help alleviate the natural gas problems for the trona (soda ash) industry in southwestern Wyoming.

4. Recreation

a. Wyoming is the home of two very prestigious National

Parks, Yellowstone and Grand Teton. In addition, the Forest Service and the Bureau of Land Management operate recreation facilities. The Wyoming Recreation Commission manages over a million acres in State Parks and Historic Sites. The State Game and Fish Commission also owns scattered parcels of recreation land. With Wyoming's relatively unspoiled beauty and an abundance of facilities, it is little wonder that recreation and tourism constitute Wyoming's third largest industry.

b. Yellowstone and Grand Teton National Parks are both located in the northwest corner of the state. The impact of over a million visitors a year is felt statewide. Most of the land-use in the immediate area is, however, controlled at the federal level. The Parks themselves are discussed extensively in the Park Service section of this land-use report.

c. The recreation areas in Wind River Indian Reservation give some indication of the makeup of visitors to these federal areas. It is estimated that 90 percent of the visitors to the Reservation recreation areas are from out-of-state, particularly Colorado and Utah.

d. The Wyoming Recreation Commission was not created until 1967. Since then, the major thrust of activity has been toward correcting obvious outdoor recreation and historical preservation deficiencies. In the state parks, the addition and improvement of boat ramps, sanitary facilities, and camp sites occupied most of the effort. Basic preservation, restoration, and interpretive measures were instigated to bring major historical sites

up to an acceptable standard. The Wyoming Recreation Commission, like the EPA, has been involved mostly with corrective measures, and has not had an opportunity to do extensive planning and problem-prevention work.

e. By 1985, the number of out-of-state visitors to Wyoming will double, reaching a count of over 8 million visitors during the summer months alone. The continued trend away from agricultural-oriented society in Region VIII points to increasing demand for Wyoming outdoor recreation opportunities. More and more scenic wildlands will be converted to camping and picnic areas, trails, visitor interpretation centers, and other summer recreation facilities.

f. In addition, the Recreation Commission predicts an 88 percent increase in snow skiing activity between 1967 and 1985. There are many areas in western Wyoming that would be suitable skiing areas. However, extreme caution must be taken when locating ski areas. Because vegetation is removed from the mountain-sides in vertical strips, the soils must be very resistant to erosion. Another important consideration is the area at the base of the mountain, where extensive commercial development can be expected. These base areas must not be located in a fragile air or water shed. Extensive ski development in Wyoming has not begun yet, partly due to the lack of good year-round roads.

g. Western Wyoming is experiencing another recreational problem, despite the lack of roads. Four-wheel drive vehicles cause extensive damage to vegetation and soils in the higher

altitudes. In the wet spruce-fir forests above 9,500 feet, jeep trails often leave muddy ruts several feet deep. On the alpine tundra above 11,000 feet, the jeep trails are destroying centuries-old alpine vegetation. Even if the jeeps were banned from the alpine tundra this year, our grandchildren would still be able to see the damage. In a short time the jeep trails deteriorate to such a degree that even the jeeps cannot use them. At that time, a new trail is simply driven that parallels the old. In some places, especially on public land, the high country is crisscrossed by muddy swaths that mark a blatant disrespect for land.

h. Snowmobiles are another problem in the high country. Because the ground is frozen and covered with snow, the snowmobiles do not normally cause the soil erosion and destruction of vegetation that four-wheel drives do. The main objection to snowmobiles is their effect on wildlife. The noise created by these machines is incredible, and deer, elk, moose, and other game instinctively run for their lives at the approach of one. There have been cases of snowmobilers intentionally chasing game until the animal dropped dead from exhaustion, and many more cases of snowmobilers unintentionally disturbing the wildlife habitat. Snowmobiles also open up a whole new world for hunters. They are used at a time when the wildlife is at a definite disadvantage, in the winter, when food is scarce and the animals are weakened.

5. Transportation

a. Much of Wyoming's undeveloped land can be attributed to a lack of high-speed year-round roads. Of the three interstate highways in Wyoming, only one - I-80 - has been completed. It runs east and west along the Colorado-Wyoming border. Interstate 90 is incomplete, but it will run east and west in the northwest corner of the state, widely avoiding the National Parks to the west. The completion of I-25, which will run north and south in eastern and central Wyoming, will probably be the transportation corridor of most significance to Wyoming in the future. It will link three major Wyoming communities: Cheyenne, Casper, and Sheridan. More important, it will connect these cities with I-25 in Colorado. It is adjacent to Colorado I-25 that the population and growth explosion is occurring along the Front Range of the Rockies. This massive urbanization is not expected to reach as far north as the Wyoming border, but the linkage with this major population center resulting from the completed I-25 will encourage increased recreational use of Wyoming facilities by Coloradoans.

b. At the state level, there is very little new roadbuilding. Most of the Wyoming Highway Department funds are going into resurfacing and widening existing roads. This would seem to indicate that Wyoming growth and development patterns are not changing drastically at present.

c. Urban mass transit is almost unheard of in Wyoming. Population densities are simply not high enough to warrant the

expenditures involved.

6. Water Development

a. In the Rocky Mountain West, the lack of water in the right place at the right time has always been a limiting factor in land-use. There is a great deal of surface runoff in the spring when the snow in the mountains melts, but this abundance is short-lived and by late summer streamflows are at a bare minimum. It is this extreme fluctuation that limits development which requires a steady supply of water.

b. Since Wyoming, with its high altitudes, is the source of several major rivers, interstate water compacts have been made to assure downstream states adequate water for their needs. These compacts were made at a time when Wyoming saw little opportunity for growth. There is a feeling that Wyoming sold itself short of water in these compacts. With the existing interstate compacts, Wyoming water-users can increase their total streamflow depletions by some 3.8 million acre-feet per year. However, existing water use utilizes the dependable flows of most streams, and surpluses are available primarily during the snowmelt runoff in the spring or during the winter months. Thus, water storage facilities are required in most instances to control the water surpluses for human use. Often, however, it is questionable whether the extra water is worth the loss of the land inundated by the reservoirs. This seems to be the case with the Yellow Jacket Project in southwest Wyoming.

c. As mentioned before, water is the primary limiting factor in development of the vast coal reserves in the Powder River Basin. In order to divert the water necessary to develop this coal, both Montana and North Dakota must agree to let Wyoming users divert it, because of the Yellowstone River Compact of 1950. Under this compact, Wyoming is authorized to divert only 494,000 acre-feet per year more than is now being drawn.

d. The State Engineer's Office handles all water rights, well permits, and diversion records. Water rights are granted on a first-come, first-serve basis if the applicant can show that the water will be put to beneficial use. Conversely, the State Engineer has the power to shut off the headgates of a water user if he is wasting or not using the water resource. There is no provision in the law indicating in-stream fishery or recreation use as beneficial uses. The Wyoming water laws contain a "public interest" clause of great importance. The State Engineer may, at his discretion, refuse to grant a water right if the use of the water is contrary to the public interest. For example, a motel complex to be built in Casper was denied water rights because it was to be constructed in a flood plain. The State Engineer's staff has discussed this clause extensively, and they see it as a powerful tool in the future for prevention of unwise land and water use. It has not been used extensively yet, but it will be used in the future as land and water development in Wyoming becomes a problem.

e. The Soil Conservation Districts are involved in water development projects. The Small Watershed Program provides federal funds for small reservoirs for flood protection. To be eligible, the district must formulate a watershed Soil Conservation Plan for all the lands in the basin involved. This seems to be a step in the right direction. Too many large reservoirs are built with no consideration of what is happening upstream. Without a plan for soil conservation, the reservoirs often become sediment laden and ultimately useless. There are 39 Small Watershed Programs approved or completed in Wyoming.

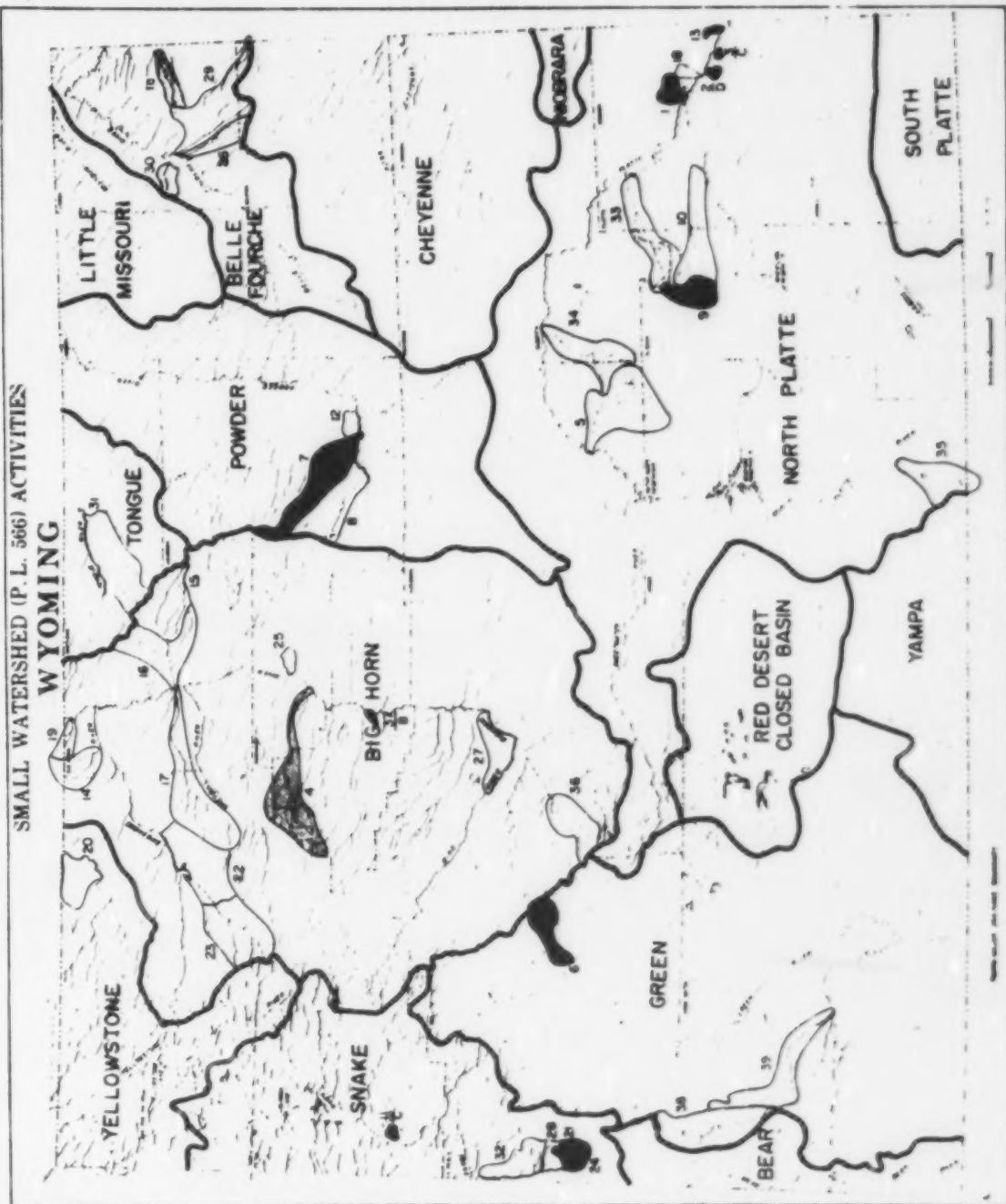
f. Water quality is not a limiting factor of land-use in Wyoming. Most streams in the state are clean enough to support trout. In isolated areas sedimentation from agriculture, municipal, and industrial pollution has impaired stream quality, but these are the exception rather than the rule.

7. Urbanization

a. Compared to Colorado and Utah, Wyoming has no pressing urbanization problems. It would be helpful to look at some trends, however, to see what can be expected in the future.

b. Mechanization in agriculture has caused a high unemployment rate among ranchers and farmers. These people are coming to the cities for jobs, and not finding them. According to DEPAD, light manufacturing firms are the answer. The prime objective of the Department of Economic Planning and Development, Industrial Division, is to diversify the industrial and economic base of Wyoming. DEPAD is attempting to attract light industry

SMALL WATERSHED (P. L. 566) ACTIVITIES



- LEGEND**
- (A) Approved Application
 - (B) Authorized for Planning
 - (C) Withdrawn from Planning
 - (D) Withdrawn from Planning
- *NOTE:** Watersheds not shaded in black are those which are not yet authorized for planning.
- WATERSHED NO. (Example 1)**

- NAME OF WATERSHED**
1. Bear River - Case River
 2. Snake River - Snake River
 3. Snake River - Snake River
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 5. Snake River - Snake River
 6. Snake River - Snake River
 7. Snake River - Snake River
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 35. Snake River - Snake River



to the state and to disperse them as widely as possible (for economic reasons). At present, about 6 percent of the work force is engaged in manufacturing activities, compared to 30 percent nationally. If DEPAD is successful, and there are indications that it may be, then a healthy growth pattern of moderate-sized communities well-dispersed over Wyoming will be encouraged.

c. Most of the larger communities in Wyoming have zoning regulations of some sort. One that seems significant is a county zoning ordinance for Natrona County, home of Casper. Casper is leading the state in new home developments. Because of the unstable soil type in the area, these developments are creating considerable soil loss. Under the county ordinance, a plot of ground cannot be stripped of vegetation for more than three months without a revegetation plan. Ordinances on the county level would be helpful in controlling suburban developments. Throughout most of Wyoming, a developer can escape the limitations of city zoning by building outside the city limits. In due time, the city will annex the development anyway.

d. Like Casper, Laramie is encountering a soils problem. The land beneath the city is characterized by shallow soils and high-clay soils, creating problems where new homes have installed septic systems. Good planning could have avoided the expensive sewage system changes that will have to be made in Laramie. In most cases, the local Soil Conservation Districts have done soils mapping in areas in and around townsites. But, if the soils maps aren't used or aren't made available for zoning and city planning, they may as well not exist.

8. Department of Economic Planning and Development

a. DEPAD is the closest thing the state of Wyoming has to a land-use planning agency. It has been mentioned throughout the report for specific programs and activities that it carries out. This section is a general analysis and evaluation of DEPAD.

b. The Wyoming Department of Economic Planning and Development was created by the Wyoming State Legislature in 1969. The authorizing statute says: "The Department shall have as its purpose, the planning for and the development of the physical and economic resources of the state." To carry this out, DEPAD is organized into four working divisions: Industrial Development, Mineral Development, Water Development and Chief of State Planning.

c. Wyoming DEPAD is a member of the Federation of Rocky Mountain States, based in Denver. This Federation is involved in some land-use planning studies, among other things. Both the Federation and DEPAD are more concerned with land-use planning for economic development than for environmental protection.

d. The Chief of State Planning has not been mentioned previously. He has a five-man planning staff. This staff is responsible for comprehensive planning for the physical and economic development of the state. They are primarily involved with administration of HUD 701 Planning Grants. DEPAD received \$48,324 last year from HUD to provide technical assistance to communities. The planning division worked with 24 communities in 1971, usually helping to set up particular zoning regulations. The Chief of State Planning also provides general information in the form of monthly newsletters

and publications, including "General Improvement Laws for Wyoming Counties and Communities," "Quality Growth Laws for Wyoming," and "State of Wyoming Laws Relating to Planning and Zoning."

e. A 30-minute planning movie was produced for DEPAD by a studio in Sheridan. This movie is to be used to motivate the Wyoming people to think about their future and the role of local planning. The movie will be shown on television and given to schools, planning commissions, county commissioners, city councils, and other interested groups to promote planning within the state.

f. Planning and zoning are not popular with the majority of people in Wyoming. Because of Wyoming's rural nature, it is hard to show the need for land-use planning and controls, even though now is the ideal time to start before development becomes a problem. The DEPAD Planning Division is not attempting any state-wide plan. They sense the opposition, and are concentrating on local zoning.

9. Other Problems and Programs

a. Out of 117 solid waste disposal sites in Wyoming, only 17 are sanitary landfills. However, these are the ones near the population centers; consequently, two-thirds of the population's refuse reaches these 17 landfills. The Wyoming Health Department has no authority to require sanitary landfills as such, but it can require that disposal sites not burn their wastes or create a health hazard. If these regulations were tightly enforced, it would force most operations to use sanitary landfill methods.

b. Two Resource Conservation and Development (RC&D) Projects

are in progress in Wyoming. The Western Wyoming project includes about 4 million acres in Lincoln and Uinta counties, and the Black Hills project includes nearly 4 million acres in Crook, Niobrara, and Weston counties. A new RC&D project is just underway in the Big Horn Basin. It will include some 8 million acres in Park, Big Horn, Washakie, Hot Springs, and Fremont counties. These RC&D projects are a cooperative effort between the federal Soil Conservation Service, the Wyoming Department of Agriculture, the Soil Conservation Districts and counties involved, and especially local volunteers. The objective of RC&D is to expand the economic opportunities in an area by developing and carrying out a plan of action for the conservation, development, and wise use of the natural resources in the project area. By forming these RC&D districts, local residents have the benefit of more financial and technical assistance than would otherwise be available. More importantly, they open a new channel for multi-county planning.

c. The Wyoming State Forest Service is directly responsible for some 200,000 acres of state-owned forest land. In addition, the State Forest Service provides assistance to the owners of the 1 million acres of private forest land. All timber cuts on state-owned lands are administered by the State Forest Service. No cutting is done in an area until a forest management plan is drawn up. State lands are administered in such a way as to maximize the economic returns over many years. As a result, unprofitable forest values such as watershed, wildlife, etc., are usually secondary considerations in the management plans.

d. Most of Wyoming's private forest land is scattered as parts of ranches. The State Forest Service encourages ranchers to make a forest management plan rather than engage in "timber mining" for a quick profit. Complete inventories of privately owned forest lands have not been made. There is a need for them, particularly in areas outside RC&D projects where data is sorely lacking. There are about 40,000 acres of tree farms in Wyoming. These are areas where intensive silviculture is practiced on existing private forest land. The State Forest Service is promoting tree farms. Much more timber per acre can be grown on a tree farm than in a wild forest stand. An increase in tree farming could help take the pressure off cutting in wild forest stands.

CHAPTER IV. UTAH

1. General

a. Utah is an arid land, with mountains in the east and deserts in the west. Despite its arid nature, Utah ranks first in the nation with respect to per capita water consumption. The federal government owns more land in Utah than in any other state in Region VIII. The majority of this land is held by the Bureau of Land Management and is used for grazing.

b. Salt Lake City is the second largest city in Region VIII. About 80 percent of Utah's population lives along the Wasatch Front Range, which extends 80 miles from Provo north to Ogden, and includes Salt Lake City. Irrigated cultivation is practiced extensively in the Bear River drainage north of this urban center, but is also carried out on the front range itself, where land-use conflicts between agriculture and urbanization are becoming critical.

2. Land-Use Problems

a. The biggest land-use problem in Utah is, put simply, the Wasatch Front Range. Urbanization there is competing with agriculture for both water and irrigable land. Increased usage and water pollution threaten the future water quality of the Great Salt Lake. Heavy recreational development is taking place in the narrow canyons of the Wasatch mountain

range. Many of these developments are products of land speculation, where water, sewage, and other utilities are not provided for. If recreational subdivision continues in these canyon areas, available water will become a primary factor in the northern half of Utah. It is already a problem in the southern half of the state.

b. Ski area development in the Salt Lake City area is taking place at a rapid rate. There are several ski areas within an hour's drive of Salt Lake City, and many more are proposed. By their nature, these ski areas are located in rather fragile environments.

c. Another Utah land-use problem is the mining and processing of ore. Two major companies, Kennecott Copper and Geneva Steel are located in contiguous counties (Salt Lake City area) which contain 56 percent of the state population. The Kennecott plant contributes 76 percent of the state's SO_2 emissions. Thus, most of the people are concentrated in an area where air pollution poses an health hazard and a nuisance. The air quality problem of Salt Lake City is further compounded by high mountain ranges nearby and almost daily temperature inversions. Add to this the visual degradation of open pit copper mining nearby, and it gives a clear picture of the land-use conflicts encountered on the Wasatch Front. The situation is not very promising, but it might have been avoided through proper planning.

3. Land-Use Planning

a. The planning situation in Utah is summed up in a reply to a land-use task force questionnaire, which read: "Utah is in the dark ages, as far as land use planning is concerned." Land-use regulation is apparent at the county and local levels only. There is an organization of several counties along the Wasatch Front which attempts to coordinate land-use planning directions, but it could not be considered a multi-county planning agency. Most county commissioners and members of local zoning boards are large landowners or real estate agents. Zoning regulations are usually promulgated to increase property values, not to protect the environment.

b. State level planning is almost nonexistent. The Utah Planning Coordinator's Office is located within the Governor's office, and acts in an advisory capacity only. The serious questions of land speculation and improper land-use are not dealt with by the state.

c. The most important state agency for regulating land-use is the Department of Health. The Health Department has occasionally prevented construction of subdivisions and recreation developments because of a lack of proper sewage disposal facilities or failure to meet standards for water supply. There are also cases where the Health Department has failed to prevent such developments.

d. The State Land Board is in a good position to plan for land-use on state-owned lands; but, according to the State Forester, in most cases there are no forest management plans for state-owned forest lands.

e. Under the Utah Soil Conservation Law Act of 1970, conservation districts are given the authority to enact land-use regulations within the districts, after majority approval in a district-wide referendum. No land-use regulations have been adopted under this Act, but it could be an effective land-use tool if used.

f. Utah land-use planning and regulation leaves much to be desired. The Utah Legislative Council expects the state legislature to either draft a comprehensive land-use law in 1973 or assign the task to a two-year planning commission. The latter would, after the two-year period, recommend a law to the 1975 legislature.

CHAPTER V. SOUTH DAKOTA

1. General

a. Agriculture is the lifeblood of South Dakotan economy. About 90 percent of the land in the state is privately-owned pasture, range, or cropland. Only 7 percent of the land is federally owned. Large sheep and cattle ranches dominate the western half of the state. Dryland and irrigated cultivation are found mostly in the eastern half. The state is bisected by the Missouri River, which has been dammed to create numerous reservoirs in South Dakota. These reservoirs are slowly being developed for irrigation purposes. Most of the water will be used east of the Missouri.

b. South Dakota does not have a population growth problem. In 1960, the state had a population of 698,000. By 1970, this figure dropped to 666,000. This outmigration is due partly to mechanization in agriculture and a lack of industrial growth.

c. Tourism is a significant element in the western portion of the state. Both the Black Hills and the Badlands are major attractions. An additional major recreational area will be created when a road system is completed around the reservoirs on the Missouri River. The new access roads will encourage heavy fishing, hunting, swimming, and boating use. This project has the highest priority of the state Highway Department.

2. Land-Use Problems

a. Increased irrigation in the eastern half of South

Dakota will probably bring about new water pollution problems caused by high-salt return flows. At the same time, wind erosion will be reduced because there will be fewer acres in summer fallow and other dryland farming methods.

b. Wind and water erosion are serious problems all over South Dakota. Overgrazing is the major cause of erosion in the western half of the state. In the eastern half, erosion is caused by summer fallowing, cultivation near stream banks, and other factors. About half the land in the state is losing more than 5 tons/acre/year of soil (see map). Soil is being lost faster than it can possibly be formed, and some farmers already find themselves down to subsoil.

c. Wildlife habitat is constantly being lost to agriculture through draining of natural wetlands in eastern South Dakota. The state has purchased some of this land outright in order to save some of the wildlife habitat from cultivation and development.

d. Feedlots are another agricultural problem. A survey made in 1967 showed a total of 1,379 feedlots located less than 1000 feet from a stream or a lake. The situation in South Dakota has not improved markedly since then.

e. While agriculture is the chief land-use problem, it is not the only one. A survey made last year of 387 solid waste disposal sites in the state showed that only one site was considered acceptable. About 93 percent of them have uncontrolled

burning and 96 percent of the sites have no plan for completed sites. Various other problems include faulty surface drainage (58 percent), unsightly appearance (95 percent), uncontrolled blowing papers (99 percent), and soil erosion.²⁷

f. Surface mining is another cause of land pollution in South Dakota, contributing to sedimentation and loss of aesthetic value. Of the 623 pits located in the state, 557 of them are for sand and gravel. In 1971, the South Dakota legislature passed the Surface Mining Reclamation Act. It is modeled after the Virginia reclamation law, but is far more lenient in its definition of small-scale operations (which are exempt).²⁸

3. Land-Use Planning

a. Of all the states in Region VIII, South Dakota and Colorado are the most active in land-use planning. In 1970, the governor of South Dakota created six substate planning districts by executive order. Three of these districts are operational, one has been funded but is not operational, and two have not yet been funded. The districts were formed partly in anticipation of state and federal land-use legislation, and partly because it was felt that the rural areas of South Dakota were missing out on a great deal of federal money which was contingent on planning.

²⁷Office of Comprehensive Health Planning, Land Resources in South Dakota, State of South Dakota; p. 3.

²⁸Ibid. p. 6.

b. At present, the planning districts are concentrating on planning for specific purposes. They are planning for HUD 701 grants, an EPA solid waste planning grant, HEW health and juvenile justice grants, and a district-wide sewer and water plan for a Farmers Home Administration grant. They are also promoting city and county zoning.

c. If and when land-use legislation is passed, the districts will be set up and ready to undertake comprehensive land-use planning.

CHAPTER VI. NORTH DAKOTA

1. General

a. As far as present land-use is concerned, North Dakota is almost identical to South Dakota. Both states are highly agricultural. In both states, 90 percent of the land is privately-owned pasture, range, or cropland. In each state, the western half is extensively grazed, while the eastern half is cultivated. Irrigation is being developed in both states with water from reservoirs on the Missouri River. Population is sparse and outmigration is occurring.

b. North Dakota has somewhat less federal land (4.7 percent) than South Dakota, and has no major tourist attractions. Industry is scarce, and most of it is directly dependent on agricultural goods.

2. Land-Use Problems

a. As in South Dakota, the major land-use problems in North Dakota are agricultural. These include overgrazing, summer fallowing, and other practices which promote soil erosion. Feedlots and draining of natural wetlands are also major problems in both states. Increased irrigation may not be a problem in North Dakota because of new state Water Quality standards. Because of the standards, proposed irrigation development in the state will be of the sprinkler type rather than land flooding. Sprinkler irrigation will have some

definite effects on land-use, because land to be irrigated can be determined by soil type rather than by contour and drainage capabilities. This should bring about wiser land utilization and a reduction in return irrigation flows, which are a major water pollution source in Region VIII.

b. A land-use conflict is developing in the Little Missouri National Grasslands area of southwestern North Dakota. There are extensive reserves of strippable coal in this region of the Fort Union coal deposit. A checkerboard ownership of public and private land is involved. Coal companies are in the process of purchasing private mineral rights from ranchers. A good deal of pressure is being applied to the Forest Service to obtain mineral leases for public land. The environmental impact of widespread strip-mining in this area has never been measured.

3. Land-Use Planning

a. The State Planning Division has commissioned a study of the Little Missouri Grasslands Area. North Dakota State University is carrying out the \$600,000 study, and they are charged with the responsibility of setting-up guidelines for future land-use in this area. At present, however, the state has no land-use laws with which to enforce guidelines. Land-use regulation in North Dakota is still done only by local and county authorities. State land-use legislation is expected to be introduced in the coming session of the state legislature.

b. Amendments to the Strip-Mine Reclamation Act are also being prepared that would have an impact on land-use. These amendments would give the Public Service Commission authority not only to grant or deny permits to mine, but also to set aside certain areas which the Commission determines are impossible to reclaim, and to forbid strip-mining in those areas. Should these amendments pass, the Commission's interest in land-use planning would increase significantly.